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THE IDEA OF FERTILIZATION IN THE CULTURE OF THE PUEBLO INDIANS

BY

H. K. HAEBERLIN

THE IDEA OF FERTILIZATION IN THE CULTURE OF THE PUEBLO INDIANS

By H. K. HAEBERLIN

OF late Graebner and his school have given momentum to discussions on scientific method in ethnology. In a well-meant attempt to do away with unmethodological work in this science, Graebner has written a book on "the Method of Ethnology" (*Die Methode der Ethnologie*, Heidelberg, 1911). Since this treatise is obviously not merely intended to be an exposition of the method peculiar to Graebner himself we must infer that he gives himself the credit of expounding "the" method κατ' εξοχήν of ethnological research. This sweeping claim is brought out in the title of the book, as well as in its contents.

It is but fair to apply to the method of ethnology the same logical requirements that are applicable to scientific method in general. I take it for granted that Graebner does not wish to exempt ethnological method from these requirements. According to the general principles of logic, the method of a given science is the "way" or mode of reasoning by which we draw logical inferences from the empirical raw material of the given line of research. It must be no more. Wundt says:—

> Empirisch soll natürlich die Methodik der Geisteswissenschaften ebensogut wie die der Naturforschung in dem Sinne sein, dass sie in erster Linie auf eine Feststellung der Erfahrungstatsachen und in zweiter auf eine Verknüpfung derselben untereinander ausgeht, wobei die letztere unserem logischen Erklärungsbedürfnisse genügen soll ohne dass etwas zu den Tatsachen hinzugefügt wird, was in diesem Bedürfnis keine zureichende Rechtfertigung findet (*Logik* Bd. 3, S. 52).

Is it really possible that Graebner considers his method to fulfill this requirement? The clearest expression of the facts seems to me to be given by Foy in the preface to Graebner's treatise:—

> Dass es sich bei dieser kulturgeschichtlichen Methode . . . um eine konsequente Durchführung ganz bestimmter Grundsätze (handelt) wird der vorliegende Band beweisen (p. xvi).

The principles that are usually termed the theory of the "*Kulturkreislehre*" have been expounded by Graebner as "the method" of ethnology. If Graebner's book claimed to be nothing more than what it really is, namely, a consistent elaboration of subjective principles, it would have a theoretical value of its own; but, since Graebner has attempted to lay down "*the*" method of ethnology, he is subject to criticism on a broader basis.

Being conscious of the near relation of ethnology to history and at the same time of the admirable qualities of Bernheim's work on historical method (*Lehrbuch der historischen Methode*), Graebner employs a scheme of treating his subject that is in many respects parallel to that of Bernheim. Nevertheless, Graebner is under the impression that the book of Bernheim has a great gap (*eine grosse Lücke*, p. 3) and attempts to supplement this shortcoming by accessory considerations. At this point, however, he introduces into Bernheim's mold of objective considerations on method those subjective principles on which the life and death of the "*Kulturkreistheorie*" depends. The proclamation of these principles is obviously the *raison d'être* of Graebner's treatise on the method of ethnology.

If this treatise is characterized as a "konsequente Durchführung ganz bestimmter Grundsätze," the question arises just what these principles are. As far as I can see, there are two fundamental dogmas on which the "*Kulturkreistheorie*" is constructed. The first is that truly objective criteria can be found to determine cultural relations and the second that cultural strata are real and can be objectively specified.

The alleged objective criteria of cultural relations are, according to Graebner:—

> das Kriterium der Form, d.h. der Übereinstimmung in Eigenschaften, die sich nicht mit Notwendigkeit aus dem Wesen des Objektes ergeben, und das Kriterium der quantitativen Übereinstimmung (p. 108).

These criteria according to Graebner have the advantage of general applicability ("*allgemeine Anwendbarkeit*," p. 109). This seems to me to be the crucial illusion. These criteria are neither generally applicable, nor is there any objective means of specifying in each case their degree of applicability.

Let us for the present confine our attention to the criterion of form. There are three reasons why this is not objectively applicable. Firstly, the different elements of a culture, for instance the material culture, social organization, myth motives, emotional values, which by the way, are as objectively real as are bows and arrows, cannot be reduced to a common denominator of comparison on account of their essential qualitative heterogeneity. Secondly, the range of cultural possibilities varies in the case of each specific cultural phenomenon.[1] Thirdly, cultural phenomena may be transformed qualitatively according to the specific nature of psychic actuality. For the first reason stated, for example, the objective forms of geometric ornaments and the interpretations that may be found associated with them show an absolute disparity of the applicability of the form criterion. For the second reason,—the varying range of possibilities,—languages and forms of descent, for instance, are of extreme inequality in the degree of applicability of the criterion of form; languages on the one hand being infinitely variable; form of descent on the other being necessarily limited in its possibilities. The same point is brought out when forms of philosophic speculation are compared with such heterogeneous phenomena as those of material culture. The monism of Laotse and that of Parmenides show a marked degree of identity or similarity. From what we know of the development of abstract thinking the probability is that a monistic system of speculation is almost essentially developed in every higher form of culture. But even when one disregards this fact and takes the position of Graebner's postulate of cultural relations, is the necessarily vague applicability of the form criterion to these monistic philosophies in any way at all comparable to its applicability to the pitch of musical instruments,[2] for example?

Since the applicability of the criterion of form varies infinitely within a continuous range of degrees and since we have no third criterion to determine in each specific case the absolute degree of its

[1] See Goldenweiser: "The Principle of Limited Possibilities in the Development of Culture" (*Journ. Am. Folk-Lore*, Vol. 26).

[2] v. Hornbostel, "Über ein akustisches Kriterium für Kulturzusammenhänge" (*Zeitsch. f. Ethn.*, 1911).

applicability, the use of this criterion is not feasible, because it involves an undeterminable variable.

The criterion of quantity consists in the quantitative coincidence of forms. Since this coincidence of forms must be ascertained by the criterion of form and this criterion of form involves, as we have just seen, an undeterminable variable, the criterion of quantity must likewise partake of this undeterminability in its applications. Both criteria are, therefore, equally useless in the ascertainment of objective cultural relations.

As if obscurely conscious of the incongruity of his deductions, Graebner, in spite of the "objectivity" of his criteria and his usual alleged disdain of subjective procedure, makes at times a rather sweeping appeal to scientific tact. He writes:—

Freilich ist mit der Auffindung objektiver und sachlich einwandfreier Kriterien nur ein Teil der Arbeit geleistet. Auch das beste Gerät tut seine Dienste nicht von selbst, sondern bedarf der richtigen Anwendung. Allgemeine Regeln werden sich dafür kaum aufstellen lassen; sie ist zum grossen Teil eine Sache des Taktes, des Feingefühls, vor allem wieder der Selbstkritik (p. 125).

This appeal may seem rather surprising when advanced by an investigator who promptly characterizes the somewhat finer scientfic tact and the more searching self-criticism of other scientists, when opposed to his axioms, as a horror of space and time ("eine Scheu vor dem Raume und der Zeit," p. 115).

The second fundamental principle of the "*Kulturkreislehre*" and of "the method" of ethnology is, as already stated, that of the reality and determinability of cultural strata (*Kulturschichten*), which implies *per se* the secondary axiom of the diffusion of a culture as a whole. This *a priori* assumption determines the conception that Graebner has of the problems of ethnology.

Aus welchen Kulturschichten setzt sich die einzelne Kultureinheit zusammen; welcher Kulturschicht gehört das einzelne Kulturelement, die einzelne Kulturform an, und wie sind diese Kulturschichten, Kulturelemente und Kulturformen aufeinander gefolgt? (p. xvi).

This ethnological method is statistical, as well as geological. In his summary of Graebner's treatise Ankermann says:—

Die gesammte Geschichte einer Kultur muss sich schliesslich in ihrer Zusammensetzung abspiegeln. Wenn wir also gewissermassen einen Querschnitt durch

eine Kultur machen könnten, so würden wir die Schichten sehen, aus denen sie besteht, und würden daraus Schlüsse auf ihre Entwicklung ziehen können, wie der Geolog aus der Aufeinanderfolge der Sedimente die Geschichte der Erdrinde abliest.[1]

This leads us to a discussion of a fundamental concept involved in the study of the cultural development of man; namely to what Wundt calls the actuality of psychic life.[2] Graebner's "*Kulturschichten*" are static in the same sense as are the sediments of geology. According to him, a culture, just like a vertical section of geological layers, consists of the sum total of these static elements. Whereas in Wundt's conception, culture is a dynamic phenomenon is the truest sense of the word and in its entirety is something beyond the mere sum of all its constituent parts. For instance, in the psychic development of the individual, as well as in that of culture objective, ethical concepts have developed from non- or pre-ethical motives. When we consider that our ethical concepts are foreign to more primitive cultures, we ask, how we could explain and conceive the existence of these ethical concepts, if not by the idea of dynamic development of psychic life. The ethical concepts and the antecedent motives, which in the course of development have led up to them, are qualitatively distinct and therefore incomparable. The result is thus something new—something creatively new. The psychological principle involved is called by Wundt the heterogeny of ends, which signifies:—

dass in den gesamten Umfang menschlicher Willensvorgänge die Wirkungen der Handlungen mehr oder weniger weit über die ursprünglichen Willensmotive hinausreichen, so dass hierdurch für künftige Handlungen neue Motive entstehen, die abermals neue Wirkungen hervorbringen an denen sich nun der gleiche Prozess der Umwandlung von Erfolg in Motive wiederholen kann.[3]

What has just been applied specifically to ethical concepts is of universal applicability in cultural development. How then can we "read-off" the history of a culture from its "*Kulturschichten*" in the same way that a geologist deciphers his layers? How can we

[1] Ankermann, "Die Lehre von den Kulturkreisen" (*Korrespondenzblatt der Gesellschaft f. Anthrop., Ethn. und Urgeschichte*, Bd. 42, p. 159); compare, Foy, *Führer des Museums für Völkerkunde in Coelm*, p. 17.

[2] *Logik*, Band 3. S. 260.

[3] *Ethik*, 3, Aufl. Bd. 1, S. 274–5.

analyze by a scheme of geological preconceptions a phenomenon which, due to its very nature, can be understood only from the perspective of psychical actuality?

These considerations, which demonstrate the evanescent nature of cultural strata, constitute at the same time the third reason already alluded to, why Graebner's criteria are not objectively applicable.

Obviously the notion of cultural stratifications implies the other idea of the cohesion of a culture in all its parts. This assumption is essential in order that the alleged affiliations of a culture be readily detected wherever found. For Graebner cultural contact is a mere superimposition of cultural complexes. The idea of the fossilized permanence and cohesion of all elements of a cultural complex enters into all the considerations of the "*Kulturkreislehre.*" With it Graebner expounds the method of determining the chronology of cultural strata (p. 160), of reconstructing mathematically "durch eine Art Substraktionsverfahren" (p. 125) the history of civilization, and stamps the idea of the diffusion of isolated cultural traits as "*kulturgeschichtlicher Nonsens*" (p. 116).

While cultural constancy is, of course, a prominent phenomenon in cultural development, it is of a nature different from the conception Graebner and his school have of it. While some cultures, like that of the Pueblo, show a very marked degree of constancy, others, like that of the Cheyenne, for example, who within the range of two hundred years have changed their culture completely, seem almost to be characterized by their very inconstancy. The range of degrees of constancy is unlimited. On account of this intensive variability, cultural constancy is clearly but of relative significance, not of an intrinsic one, as would have to be the case, if it were useful for the reconstruction of cultural strata. An *a priori* generalization of cultural constancy is therefore a misconception. Where phenomena are of a singular nature, scientific investigation must be based on the individual empirical data themselves. A generalization is possible only after their analysis.

Furthermore, the constancy of a culture does not imply its cohesion as a whole in the process of diffusion, as the theory of

cultural strata necessarily postulates. Cultures do not necessarily diffuse as a whole, nor is that the common mode of diffusion. It is obvious, for instance, that a type of diffusion has taken place from the Northwest coast to the Plateau area and from the Pueblo to the Navajo that has extended only to limited and more or less dissociated parts of the participating cultures.

Graebner has, as we have seen, introduced postulates into his method of ethnology that are highly problematic and far from being objective. We agree with him that it is desirable to insist on methodological efficiency in all ethnological investigations. But since method is logically but a means to an end and does not purpose to prove a theory, it must be insisted that we need method in all our work, but never a special and preconceived kind of method.

The various objections that have been brought up in the foregoing discussions against Graebner's "*Kulturkreislehre*"are ultimately included in the one fact that Graebner excludes *a priori* from his considerations the psychological problem of cultural development. The way in which Graebner refers to psychology is, I believe, instructive for his point of view in general. Purely formally it is interesting to note that he leaves this discussion for the very last paragraph of his book. After speaking of the importance of the knowledge of the human psyche, Graebner says:—

> Von grösster Bedeutung ist sie (die psychologische Begabung) aber überall da, wo die objectiv methodischen Kriterien keine eindeutigen Schlüsse ergeben und also die Hypothese eingreifen muss. Wo etwa die Entwicklungsfolge mehrerer Formen, wo die Zugehörigkeit einer Erscheinung zu dieser oder jener Kulturgruppe nicht objektiv festzustellen ist, da werden die Probleme zu Fragen der psychischen Kausalität (p. 170).

It seems to me that this is a most superficial manner to treat of psychology. Graebner, after having abolished the psychological problem *a priori* from all of his "objective" considerations reserves the right to reintroduce it as a convenient material to fill out the gaps in the "general" applicability of his "objective" criteria.

While this psychological appendix of Graebner's treatise cannot be regarded as a serious attempt to cope with psychological problems, Ankermann's standpoint is clearly defined and merits at-

tention. After summarizing the considerations of Graebner he adds:—

> Damit sind aber natürlich nicht sämtliche ethnologischen Probleme gelöst. Es bleibt noch die Erforschung der Entwicklungsreihen und der Ursachen der Kulturerscheinungen. Das ist eine ganz andere Aufgabe, die auch eine ganz andere Methode erfordert nicht eine historische, sondern eine psychologische. Aber wir werden diese Aufgabe mit viel grösserer Aussicht auf Erfolg in Angriff nehmen können, wenn erst die vorhin beschriebenen Untersuchungen durchgeführt sind (op. cit., p. 161–2).

From this it is obvious that Ankermann, taking an independent position in this respect, does not advocate the "*Kulturkreislehre*" because he is unconscious of the existence of real psychological problems, but because he assumes that the historical and the psychological phenomena can be investigated quite independently. This is, however, I believe a crucial error. The psychic side of culture cannot be disposed of as an accessory element and does not exist independently, but is at every point in time and space inherently associated with the other side of culture, with the historical side. The psychical and the historical are but two different aspects of the same thing. Every cultural phenomenon involves some psychic process, which determines the singularity of its significance. Thus every individual case of diffusion, for example, is not a mechanical phenomenon of historical contact and therefore not automatic, but is rather a phenomenon with a specific psychological content and is therefore of a singular nature. How then can we separate in our investigations phenomena which are characterized by their inseparable coherence?

The disregard of the intrinsic association of all psychic and historical phenomena seems to me to be the real stumbling-block of all discussions on parallelism versus "*Kulturverwandtschaft*" and vice versa. It is impossible that the two sides ever agree or that the one refutes the other, as long as the fact just mentioned is neglected. The one side, emphasizing the psychological problem alone will continue to find "*Elementargedanken*," while the other side, laying all stress on what it regards as the real historical facts, will continue to decipher imaginary strata of culture. Each side will contend that the other must be the first to prove its thesis em-

pirically. The refutation brought about of the "*Kulturkreislehre*" is not affected by demonstrating the greater plausibility of independent development, but by pointing out fundamental errors of method.

On account of the singular nature of all cultural phenomena the only logical conclusion with regard to method is that the individual phenomena as such must be the starting point of ethnological investigation. Our attitude towards the phenomena must be free of all assumptions that preclude the objective study of any of its phases, of such assumptions for instance that blind our vision towards psychological problems. All generalizations must follow from an analysis and comparison of the individual phenomena.

When comparing Navajo ceremonies with those of the Hopi, one finds that the external similarity of details in the ceremonies of the two peoples (prayer-sticks with facets, pollen, yucca suds, specific forms of the masks, nine-days duration of ceremonies, etc.) is so great that a denial of most extensive borrowing would be absurd, even if we did not know from other sources of the close cultural contact between the two peoples. Equally certain and equally objective as this historical inter-relation, however, is the other fact that the psychological setting of the Navajo ceremonies is altogether different from that of the Hopi ceremonies. While the great Navajo ceremonies are all focused on the healing of the sick,[1] those of the Hopi are obviously directed on the production of fertility for the fields. This is a generalization that can be gained from an analysis of the specific phenomena of the rites. The bull-roarer, to take but one example, is used in the ceremonies of both peoples and is beyond a doubt historically interrelated. But while among the Hopi it is unmistakably associated with the production of rain, the shaman of the Navajo, after swinging it applies it to specific parts of the body of the patient with the object of curing him.[2] From this we are justified in inferring that the psychological attitude of the Hopi priest and that of the Navajo shaman towards the bull-

[1] Matthews, *Navaho Legends*, p. 40.

[2] Tozzer, "Notes on Religious Ceremonials of the Navaho," *Putnam Anniv. Vol.*, p. 336.

roarer differ fundamentally in spite of the historical identity of the objective side of this instrument. In each case an entirely different group of concepts or, probably more exactly, of collective representations,[1] is involved. A discussion of the ceremonial use of pollen, snakes,[2] prayer-sticks, etc., in the Navajo and Hopi rites would bring out the same point. The diffusion of the material substratum, so to say, of a cultural phenomenon by no means implies the simultaneous diffusion of the associated ideas. These psychological associations, though integral parts of a culture, do not exist for Graebner. They evade the "objective" form criterion and thus do not lend themselves to the book-keeping of the "*Kulturschichten.*"

What pertains to diffusion also holds good for the variable stability of cultural traits. The degree of constancy of a culture is not open to a purely historical explanation. The marked constancy of the Northwest Coast culture and the relative inconstancy of that of the Plateau area cannot be "read-off" from any cultural strata but involve a psychological problem of a peculiar type.

Schematically considered, cultures are characterized by their psycho-historical relation to other cultures on the one hand and by the psycho-historical genesis of its "setting" on the other. These two sides of cultural development, which may be called the extensive and the intensive lines of causal interrelations, are, of course, again inherently interlinked. While a culture like that of the Plateau area is characterized by the passivity of its relations to other cultures and by the lack of originality in its setting, the culture of the Pueblo offers an altogether different picture. It is true that the process of extensive diffusion is equally evident here as in the Plateau area and numerous elements of the Pueblo culture, as for instance agriculture, the emergence idea, the water serpent, the hoop and pole game, and many others, are found diffused over large areas of North America and are in no way in themselves characteristic of the Pueblo culture. Still this culture shows an originality in its setting, which is just as objectively real as are drums and clubs

[1] Lévy-Bruhl, *Les fonctions mentales dans les sociétés inférieures*, Chap. 1.

[2] Tozzer, *op. cit.*, p. 330.

for Graebner. The setting of the Pueblo culture, which is in no way equal to the sum of all its traits diffused from without implies a process of active assimilation of all diffused elements, which focuses the most heterogeneous phenomena in a definite and characteristic direction.

Let us take a concrete example. The area of the occurrence of the hoop and pole game in North America shows, on account of the continuity of the area and the complexity of the phenomenon, a case of extensive diffusion. The ideas, however, which have become associated with it in different areas, as among the Pueblo and in the Plains, are so heterogeneous that the ceremonial usages of the game are, in spite of its formal identity, psychologically quite distinct cultural phenomena. When we find that a large number of traits of Pueblo culture show "diverted" associations of this kind and that the different series of associations among themselves again display the same psychological trend, we have a means of characterizing this culture as distinct from others and of specifying its psychological setting.

The specific psychological characteristics of the Pueblo culture I have designated tentatively by the term of the "idea of fertilization." It must be insisted that this term possesses but the heuristic value of a catch-word. The idea of fertilization does not, of course, embrace the cultural setting of the Pueblo in its whole complexity any better than would the idea of healing the sick exhaust that of the Navajo. For the present, however, I think the term is sufficiently expressive, not to characterize the Pueblo culture exhaustively, but to indicate its characteristic trend in contradistinction to that of other cultures. This characteristic trend I shall try to specify on the following pages.

The relativity of the value of our catch-word appears furthermore from the fact that, in spite of the great similarity in the culture of the various Pueblo peoples, there are marked differences. The culture of the Sia, for example, would seem to be less distinct from that of the Navajo than is the culture of the Hopi. It must be borne in mind that no culture area is uniform in all its parts. The question before us is not, whether the setting of the Pueblo culture

when conceived in its geographical limits does not overlap at any point with that of another culture, but whether an analysis thereof brings out objective traits of the nucleus of the culture, which permit a characterization of its specific connotations.

The complementary conceptions of a Sky-father and of an Earth-mother, which are found in the Old World,[1] have also a wide area of occurrence in the New World. In North America this area is obviously continuous. While the ideas were typically developed in Central America and Mexico, they are also a universal feature of the tribes of the Southwestern cultural area, thus of all the Pueblo peoples,[2] the Navajo,[3] Apache,[4] Mission Indians,[5] Mohave,[6] and many others. They are furthermore common in the Plains, for example among the Pawnee,[7] Wichita,[8] and Omaha.[9] Morgan speaks of the same conceptions among the Iroquois. These instances may suffice to point out at least the general trend of distribution. The above-named ideas seem to be foreign to the mode of thinking of the tribes of the Northwest Coast and of the Mackenzie area, for example. As far as I can see, the distribution of these conceptions in North America corresponds closely to that of agriculture and thus somewhat more vaguely to that of pottery. What these coincidences mean future investigations will have to show.

Hence, the idea of the complementary sky and earth beings itself does not constitute a unique characteristic of the Pueblo. I shall, however, attempt to show that on account of the typical associations which this idea has met with in the culture of these peoples, it has found a specific expression characteristic of the center of the Southwestern culture area.

---

[1] Compare for example Sanskrit, *Dyaus-pitar* (dyaus-heaven); Greek, Zeus; and Latin, Jupiter (Jovpater).

[2] Dr. Spinden kindly informed me from his unpublished material that among the Tewa of the Rio Grande "the Sky-father and the Earth-mother are very general concepts and are doubtlessly complementary."

[3] Reference 56, p. 35.

[4] Personal information from Dr. Goddard.

[5] Reference 18, p. 187.

[6] Reference 4, p. 178.

[7] Reference 17, p. 14–16.

[8] Reference 15, p. 19–20.

[9] Reference 54, very frequently alluded to by Miss Fletcher; reference 55, p. 733.

When speaking of the center of a culture area, we are, of course, aware of the relativity of this term, especially in the realm of mythology and religion. Mythological and religious concepts are often so vague and their historical fates so varied, that with reference to them we cannot always hope to make a clear and sharp distinction between cultural centers and marginal regions. In our interpretations we shall therefore from time to time draw neighboring tribes of the Southwest into the range of our considerations of the Pueblo culture.

In the mind of the Zuñi, the Awonawilona, which Cushing calls "All-container" and which Mrs. Stevenson evidently conceives as manitou, is vague and changeable. In its concrete form it is conceived as "the blue vault of the firmament,"[1] which sends the lightning and the accompanying rains. It is psychologically interesting that the Sky-god and the Sun-god are interchangeable concepts. While the Sky-god seems to exist only in theory, so to say, it is always the Sun-god, or more correctly the Sun-bearer, who figures as the mythological hero. Where the dramatic action of mythology does not come into play, the Sky-father and the Sun seem to be interchangeable and are probably not clearly distinguished in the mind of the natives. Thus it is sometimes the sky and sometimes the sun that is conceived as fructifying Earth-mother.

This concept of fructification is in the mind of the Indians either general or quite concrete and specific. In its general form it is, as it seems, the more or less speculative idea of the sky lying on and embracing earth-mother.[2] In its specific mythological form the concept, so common in the Southwest, is that of a woman, obviously an Earth-goddess, who while lying down is impregnated either by a sunbeam or by a drop of water. Then again it is the rain in general that affects the union and the fertilization. The interrelation of the associations is evident. Psychologically it is interesting, that the Hopi and Zuñi, when petitioning for rain—an act of a very concrete and practical purport—do not address the sky, as one would logically expect, but the sun,[3] or, if you like, the personification associated with it.

[1] Reference 85, p. 23.

[2] Reference 7, p. 379.

[3] 35, p. 85.

A concept of the kind just discussed must, of course, be regarded as a psychological complex of associated ideas, saturated with emotional values of the group.[1] Since complexity is of the very nature of this concept, we must guard against its undue simplification through analysis.

As stated above, the complementary concepts referred to are themselves, not at all restricted to the Southwest. The Pawnee, for example, call the earth, the mother who gives birth to all things. But the way in which the idea of gestation and parturition is carried out and the religious rôle it plays in the Southwest, is not paralleled, as far as I am aware, in any part of America, north of Mexico. In speaking of the Hopi, Fewkes says:—

> The earth in their conception always existed, and, following the analogy of growing vegetation, organisms were given out of the earth or were born like animals. The earth to them is not a creation but a mother, the genetrix of lesser gods and animals, and the ancestor or first of the human race.[2]

Matthews believes the story of the emergence to be a myth of gestation and birth.[3] The earth-woman, known in the myths characteristic of the Southwest under various names, such as "The Woman of the Hard Substances" (Hopi) or "The Woman who Changes" (Navajo, Apache), is generally conceived as cohabiting with the sun and giving birth to the war-gods. In other versions she creates the ancestors of various clans from her epidermis.[4] The Mission Indians of Southern California, who in many respects belong to the Southwestern culture area, conceive the earth and the heavens as cohabiting. The earth not only gives birth to the great Ouiot, but also to mankind in general.[5] The figure reproduced by Kroeber representing the emergence of the people from "The Mother of All" leaves no doubt as to the conception of parturition.

An association not uncomparable with the one of the sky and the sun exists also between the earth and the moon. The idea

[1] For a discussion of the concept of the collective representation see reference 64, Chap. 1.

[2] 27, p. 350–1.

[3] 73, p. 738.

[4] 72, p. 95, and 71, p. 31.

[5] 18, p. 187, and 63, p. 312–14.

appears clearly in a Pima myth, in which Earth Doctor, the universal creator, says:—

> I shall unite earth and sky; the earth shall be as a female and the sky as a male, and from their union shall be born one who will be a helper to me. Let the sun be joined with the moon, also even as man is wedded to woman, and their offspring shall be a helper to me.[1]

Among the Pawnee the moon, a female, cohabits with the sun, a male, and gives birth to the first man.[2]

The following is an interesting passage taken from a Tewa myth recorded by Lummis. P'ah-hlee-oh, the Moon-maiden, was the first woman. Of her was typical the Mah-pah-róo, the Mother, i. e., an ear of corn with feathers. She was the seed of all humanity and the mother of all things, as the sun was the father of all things. The Moon-maid was the companion and wife of the Sun.[3]

The Tewa [4] and Keres [5] regard sun-father and moon-mother as their principal deities. The moon-mother of the Keres is represented by the *yaya*, or "mother," which corresponds to the Sia *Iärriko* and the Hopi *tiponi*. Again, the Sia emblem is unequivocaly associated with "your mother in the world below." [6]

When speaking of these associations of the earth and the moon and their respective deities, it is necessary to avoid intentionally the term of identity. Although equations of this kind are commonly used by investigators to simplify their interpretations, they are certainly not psychologically warranted. It would be absurd to draw from the common traits of a moon and an earth-goddess, the inference that the people in whose religion these deities occur really conceive the moon as such and the earth as such as identical or even as similiar concepts. On account of their common associations these deities may of course fuse and then be conceived as one personification with one name. The only term that is correctly applicable and that does not say more than is warranted by the

[1] 78, p. 208.
[2] 20, p. 743, and 14, p. 4.
[3] 69, p. 71–72.
[4] 1, p. 308.
[5] 1, p. 288–9.
[6] 82, p. 40–41.

data is that of associations,—in this case, of associations between the earth on the one hand and the moon on the other. The decisive point seems to be that the beings that figure in primitive religion and mythology, never having undergone a logical specification and systematization, are not clearly definable, are not "finished" products of the human mind, but are rather subject to kaleidoscopic changes due to the shifting angle of apperception of the folk as a whole as well as of its constituent individuals. Thus in some myths, ceremonies, and customs the specific associations of a goddess with the moon may come into prominence more clearly than in others; we should then for the sake of brevity and convenience speak of a Moon-goddess. In other cases the associations to the earth may stand in the foreground; we should then briefly speak of an Earth-goddess. These terms do not imply that the associations of this goddess with the moon or the earth, as found in this area, exhaust all the possible or actual associations of the deity in the mind of the people. It is an *a priori* fact, that the whole wealth of specific experiences may enter into the religious and mythological imagination of a people. After these considerations I hope I shall not be misunderstood when I speak for the sake of practicability simply of a Moon or an Earth-goddess, or of similar concepts.

According to Cushing[1] an important being of Zuñi mythology is,

> the gentle moon, mother of the women of men, through whose will are born the children of women, the representative in this system of deities of the Shewan-okao (Mrs. Stevenson writes Shíwano-ᵗka), or seed-priestess, younger sister of the priests of the temple. . . .

The complementary pair of deities, Shíwanni, corresponding to the heavens, and Shíwano-ᵗka, the "Earth-mother"[2] corresponds exactly to the Ashiwanni (plural of Shíwanni), the Zuñi rain priests and to Shíwano-ᵗka, the Priestess of Fecundity, in the Zuñi ceremonial organization.

In this way the idea of fertilization finds in the Zuñi religion a

[1] 6, p. 191.

[2] 84, p. 33–34.

double expression in a god and a goddess on the one hand and in a society of priests and a priestess on the other. This complex of associations seems to me to constitute a striking characteristic of the center of the Southwestern culture area.

It may be of interest to note the general tendency in the Southwest to conceive the two complementary beings as brother and sister. Among the Luiseño the sky is a brother of the earth.[1] The Zuñi regard the sun and the moon as brother and sister.[2] In a myth motive common to the Zuñi, Navajo, and Luiseño, a brother and sister entertain unlawful connubium. Siwulu^{t}siwa and Siwulu^{t}-si^{t}sa,[3] as they are called in the Zuñi version, and First Man and First Woman of the Navajo version[4] become conscious of their crime. The Luiseño version identifies them clearly as the Sky and Earth-mother.[5] The Zuñi couple gives birth to the Koyemshi, the masked personators of whom are closely associated with the idea of fertility in the ceremonial organization. In the face of these facts one might be led to ask whether the concept of the blood-crime possibly denotes an accentuation of the idea of sexuality, but I dare not offer an explanation of the connubium of brother and sister.

In the Hopi myths and ceremonies there appears a large number of goddesses; called Wuhti (Women), who have different names, but whose attributes and functions are so similar that there can be no doubt as to the identity of the ideas underlying their personifications. Fewkes attributes this multiplicity to the composite nature of the Tusayan population. He says:—

> The Earth-Mother appears under various names, which differ in different clans, apparently indicating that before the various clans now composing any one Hopi pueblo were united, each was familiar with the conception of an Earth-Mother, and denominated this being by a clan name, as Old Woman, Goddess of Germs, Spider Woman and various other appelations.[6]

The question, of course, remains open, whether we are here dealing with a case of convergence or one of assimilation.

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[1] 18, p. 187.

[2] 85, p. 109.

[3] 85, p. 32–33; 84, p. 35–36; 7, p. 404–5.

[4] 70, p. 69–70.

[5] 19, p. 129–32.

[6] 40, p. 90; see also 34, p. 49, and 33, p. 449.

According to a Hopi origin myth recorded by Voth[1] Huruing Wuhti, "Hard Being Woman, i. e., woman of that which is hard" (shells, corals, turquoise, beads) lived in the ocean in the east. Another Huruing Wuhti lived in the ocean in the west. Each lived in a kiva. The sun, who also existed at the time, traveled continually from the eastern kiva to the western kiva, emerging in the morning from the hatchway of the former and entering in the evening the hatchway of the latter. During the night he would continue his journey under the water from west to east.

According to another version[2] there was only one Huruing Wuhti, who lived in the west. She "owned the moon, the stars and all the hard substances, such as beads, corals, shells, etc." This evidently shows an association of the "hard substances" with the moon. The sun lived away in the east. Huruing Wuhti sent the moon to fetch the Sun. The sun thereupon traveled from the east to the west to visit the Wuhti. When he arrived the Wuhti said to him: "Thanks that you have come, my father, because you shall be my father." "Yes," the Sun said, "and you shall be my mother, and we shall own all things together." Hereupon the sun and the woman created by magic birds, animals, and man.

Huruing Wuhti (Fewkes writes the name *Hu-zru-in-wu q-ti*) also plays a prominent rôle in the legend of the Snake ceremony. Of this there are a number of variations in the several villages. These variations are, although often contradictory, remarkably similar and bring out with great constancy the traits and actions attributed to Huruing Wuhti and to Tiyo, the Snake Hero. These two present characteristics which show their association with the earth and moon, on the one hand, and with the sun on the other. The purport of all the variations of the so-called snake legend is that a youth travels to the place where the sun sets and thence to the underworld. After various adventures he returns with the secrets of the Snake ceremony.

Tiyo, the son of a chief, lived with his people at the Grand Cañon,[3] a place, which is distinctly associated in the mind of the

[1] 89, p. 1.

[2] 89, p. 5 et seq.

[3] 90, p. 349; 12, p. 255.

Hopi, with the *sipapu*, the orifice through which the people emerged from the underworld.[1] This *sipapu* is associated with the rising and setting sun. Tiyo wonders where all the water of the river flows to. He therefore decides to float down the river to investigate. After a series of experiences that vary in the different versions, Tiyo comes to the kiva of Huruing Wuhti situated at the mouth of the river.[2] The walls of her kiva are decorated with beads, turquoise, shells and the like, the "hard substances." Huruing Wuhti at first appears to Tiyo as an old ugly hag. But having the power of changing her form, she becomes a beautiful maiden at night. The Walpi version speaks of her as the "kind mother" with tender and generous heart. According to the Mishongnovi and the Shipaulovi versions Huruing Wuhti, after taking the form of a beautiful maiden, invites Tiyo to sleep with her. In the Walpi and Oraibi versions the sun-man, a handsome youth, descends into the kiva of the Wuhti, while Tiyo is there. He invites Tiyo to accompany him on his journey under the earth. They descend into the earth through the *sipapu* in the floor of the kiva of the Wuhti. In the middle of the earth below they visit Mü-i-yiñ'-wûh, the God of the Underworld and of Germination.[3]

In spite of the contradictions of the various versions, I believe that Tiyo is more correctly a sun-god or rather that his associations with the sun are unmistakable. Equally clear are the relations of Huruing Wuhti to the earth and the moon. Thus she lives in a kiva into the hatchway of which the sun descends in the evening; she is the controller of the moon; at night she becomes a beautiful maiden; she is the kind mother and creates animals and men; her relations to the sun-god are unequivocal.

The same woman in the west also figures prominently in the mythology of the Athapascan of the Southwest. Esdzanadlehe, "Woman-who-changes," as the San Carlos Apache call her, is in the myths regarded as the mother of the wife of the sun, but in the songs she appears as his wife. The Jicarilla Apache say that the earth

[1] 37, p. 106.

[2] 37, p. 112 et seq.; 12, p. 258 et seq.; 90, p. 350 et seq.; 89, p. 33 et seq.

[3] 37, p. 113.

was made of the body of this woman, the Rio Grande being her backbone and Pikes Peak her head.[1] Estsanatlehi, "Woman-who-changes," of the Navajo lives in a house in the west which is just like that of the sun in the east.[2] She is the wife of the sun and mother of the war-gods.[3]

The distribution of these myth motives regarding the earth-goddess and her specific relations to the sun and to the twin war-gods is not coextensive with the much wider distribution of Sky-father and Earth-mother. These latter concepts are not, as we have seen, in themselves characteristic of the Pueblo, but their secondary associations, at least among the Hopi, with the Snake-Antelope ceremony and thus with a very specific expression of the idea of fertilization seem to me to be typical of the center of the culture area in question. We shall later on find a similar condition of affairs brought out in the case of the twin war-gods.

The idea of the emergence of mankind from the inside of the earth to its surface is likewise not confined to the Southwest. It is found in the Plains.[4] In the Southwest it seems to be characterized more or less distinctly by an association with the analogous idea of gestation and parturition. The case of the Luiseño has already been mentioned.[5] In the Zuñi creation myths, according to Cushing, the sexual intercourse of Sky-father and Earth-mother causes the latter to conceive in her ample womb the races of man.[6] The womb is the underworld through which the people had to pass before reaching the surface of the earth.

Another phenomenon distinctly characteristic of Pueblo culture is the elaboration of the idea of the *sipapu* as the place of emergence. This is brought out very clearly by a comparison of the Pueblo with the Navajo. The myth of emergence of this latter people is almost literally the same as some of its versions among the Pueblo, but still the specific ceremonial significance of the *sipapu* is entirely absent.

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[1] Personal information from Dr. Goddard.

[2] 56, p. 355.

[3] 70, p. 105–6; 72, p. 95; 71, p. 19.

[4] For example among the Arikara: 16, p. 12–17.

[5] 63, p. 312–14.

[6] 8, p. 1; 7, p. 379 and 382.

It is necessary to distinguish between the mythical *sipapu*, which is conceived as the place of emergence of mythical times, and the ceremonial *sipapu*, which is the concrete counterpart of the mythical one. The mythical *sipapu* of the Hopi is, according to Fewkes,

> the traditional opening through which, in ancient times, the people came to the earth's surface, and is associated in the Indian mind with that opening through which individuals as well as races are born.[1]

It is the exit from the underworld, where the house of the sun and the earth-goddess is and where the latter gave birth to the clans of man.[2] The Hopi usually conceive it as located in the Grand Cañon.[3]

The *sipapu* is thought of as the opening to the underworld, the place of fertility. But lakes and springs are also conceived as passages of communication to this place and are more or less consciously identified as *sipapus*. The Rio Grande Pueblo quite generally claim that they emerged from a lake or *lagune*. The Taos lived in a lake before migrating from the north to their present home.[4] The Tewa of the upper Rio Grande locate the *lagune* of their birth in southern Colorado and call it *Ci-bo-be* or *Shi-pap-u*.[5] Similar beliefs are recorded from the Tewa of Ysleta near El Paso, Texas,[6] the Jemez,[7] Sia,[8] and Acoma.[9]

In the ceremonial life of the Pueblo various devices are looked upon as passages of communication with the deities of germination below. Thus in the Snake-Antelope ceremony the plank, upon which the dancers stamp in the public performances, is regarded as a *sipapu*. In the Oraibi Powamu a sand mosaic is used which is representative of the *sipapu*.[10] From the center of it leads a yellow line,—the path of life. A medicine bowl standing on the middle of

[1] 38, p. 20.
[2] 40, p. 86.
[3] 24, p. 227; 52, p. 35; 88, p. 68.
[4] 74, p. 42.
[5] 3, p. 111; 1, p. 303.
[6] 25, p. 71.
[7] 2, p. 207–8; 1, p. 315.
[8] 82, p. 39.
[9] 61, p. 299.
[10] 88, Plate 53.

a pile of sand, on which are drawn six lines corresponding to the cardinal points and representing the earth, is also used to represent the mythical orifice.[1] The principal and constant ceremonial *sipapus*, however, are the orifices in the floor of the Hopi and Zuñi kivas.[2]

They have been called "symbolic" of the mythical *sipapu*, out of which the people emerged. I would like to call attention to the fact that, although the term "symbolic" may be used for the sake of convenience of expression, the *sipapu* of the kiva is conceived by the natives as a *real* opening to the underworld and in so far is not at all symbolic. The distinction between the symbolizing and the symbolized object often corresponds to our own ideas, but not always to the psychology of the natives.

As the underworld is the abode of the deities of germination and fertility, the Hopi evoke their help by calling down the *sipapu* of the kiva.[3] Obviously with the same idea in mind offerings are deposited in the crypt or *sipapu* of the Walpi plaza.[4] In Zuñi food, prayer-sticks, and grains of corn are deposited in the circular opening in the floor of the ceremonial chamber.[5] The final act of the Zuñi winter solstice ceremony consists in depositing the meal of the altar painting, which is always considered a very effective substance, in the *sipapu* with a prayer for fertility.[6] In the night ceremonies of the Council of the Gods of Zuñi, offerings are deposited in the *sipapu* of the kiva.

A diminutive game of 'sikon-yämune tikwane[7] with lashowawe (feathers) attached, grains of corn of the colors of the six regions, sweet corn, squash, watermelon, and muskmelon seeds are deposited as seeds in the earth. . . . Prayers are offered for the seeds to grow into life, and for rains.[8]

Of the various Hopi deities, who are associated with the under-

[1] 92, p. 27.

[2] 85, p. 209; 53, p. 268.

[3] 26, p. 55.

[4] 27, p. 360–1.

[5] 85, p. 187 and 209.

[6] 85, p. 141.

[7] The ring and stick game of the Koyemshi, which, as we shall see later, is closely associated with the idea of fertilization.

[8] 85, p. 247.

world and with the idea of germination, Müyiñwû [1] seems to represent the association in a typical way. He is thought to live under the *sipapu* of the kivas. Through the *sipapu*, which, as is stated, has never been closed since the races emerged, he sends the germs of all living things.[2] He controls vegetation and owns the all-important corn.[3] After arriving in the west at evening the sun gives the *pahos* (prayer-sticks) he has collected on his course during the daytime to Müyiñwû.[4] In the Walpi Snake legend Tiyo, the counterpart of the sun, does the same thing, and thus gets into the good graces of Müyiñwû, who tells him that he is in command of "the seeds of all vegetation that grows upon the surface of the upperworld, and of all animals and men who walk upon it." [5]

When one bears in mind that water and fertility are practically synonyms in the mind of the Pueblo, it is readily understood why the Great Waterserpent, the Palülükoñ of the Horn, should be conceived in a way that is very similar to Müyiñwû. Fewkes says he is the father of all life, just as Müyiñwû, the earth, is its mother.[6] While water and thus fertility are the general ideas with which the serpent is associated, he is specifically associated either with springs or with clouds.[7] The interrelation of these sources of fertility is apparent and characteristic of Pueblo culture. Palülükoñ is sometimes multiplied so as to correspond to the six cardinal points and is then regarded as the helpers of the six rain gods, the *Omowûh*,[8] who correspond to the Zuñi Uwannami. Fewkes represents him as having six udders, from which all the water and blood of the earth comes.[9]

[1] In the accounts of Fewkes and Voth Müyiñwû is sometimes referred to as a male deity, sometimes as a female one, and sometimes as a couple of a male and a female deity.

[2] 75, p. 17.

[3] 92, p. 29.

[4] 39, p. 436.

[5] 37, p. 113.

[6] 41, p. 110.

[7] The association between smoking and cloud-producing is well known. In the Berlin Museum (No. IV, B2503), there is a Pueblo *Omowûh* (cloud) pipe (obtained, according to the catalogue, from the Apache), on which is scratched a figure of a serpent, obviously the so-called "Plumed Serpent," out of whose mouth projects a zigzag line ending in a cloud symbol. On the opposite side of the bowl the zigzag with the cloud-symbol is repeated.

[8] 39, p. 433 et seq.

30, p. 16.

Springs and *lagunes*, as we have seen, are regarded as entrances to the underworld, as *sipapus*, and hence, as direct paths of communication with the gods of fertilization. The ideas involved are brought out clearly in numerous rites. The Walpians think the serpent lives in the sacred Sun Spring near their village.[1] Offerings are made to him at this spring; and in the Palülükoñti ceremony interesting rites take place here, during which his image is dipped into the water.[2] In the myths Palülükoñ figures as a water monster.[3] The Zuñi water serpent, Koloowisi, is the "Keeper of Cereals."[4] In the Zuñi initiation ceremony of the Kotikili[5] the Priest of the Bow and the Priestess of the Earth catch in a bowl the water poured from the mouth of an image of the serpent. This sacred water is partly drunk by each guardian and partly by his novitiate. Furthermore, "the boy sprinkles the corn stalked in his house with this water." Then the seeds of all the cereals that are poured through the abdomen of the serpent are caught in a blanket and distributed to all present.

The Great Serpent of the Pueblo is commonly known as the "plumed serpent." As far as I can see, however, the plumes are by no means an essential characteristic of him, neither in the myths nor in the rites. The term "horned serpent" would be equally appropriate, if, indeed, not more so. The conservative use of the term "plumed serpent" seems to me to be based on the more or less popular identification of the Pueblo serpent with Quetzalcoatl of the Nahuatl. This analogy is, I believe, misleading. While I am well aware of the extensive cultural relations between Mexico and the Pueblo area, I can see no reason why in this case the serpent of the Hopi and Zuñi should be any closer related to Quetzalcoatl than the horned water serpent of the Keres or of the Creek, for example.[6] Quetzalcoatl is the serpent of the Quetzalbird and at the same time the culture-hero of the Toltec. The Pueblo serpent, on the other

[1] 27, p. 370.
[2] 29, p. 279–80; 28, p. 624.
[3] 89, p. 102 et seq.; 11, p. 93 et seq.; 83, p. 544.
[4] 84, p. 36.
[5] 83, p. 552–3.
[6] 1, p. 292; 57, p. 259.

hand, has nothing whatsoever in common with a culture-hero. In mythology he appears clearly as a water monster, conceived in much the same way as by other American tribes. In the ceremonies of the Pueblo he is a deity of fertilization.

The attempt of Fewkes[1] to trace an historical relation between Palülükoñ and Quetzalcoatl does not seem convincing to me. It would seem to me that he does not interpret correctly the incidents of the myth of the Toltec[2] and that he overestimates the historical evidence of myths.

In the Walpi ceremonies of Soyaluna and Palülükoñti, images of Palülükoñ play a prominent part. Very suggestive as to the associations of this being with the idea of fertilization is the fact that to the backbone of each image are tied "a quartz crystal called the heart, and a package which contains corn seeds of all colors, melon, squash, cotton, and other seeds, and a black prayer-stick."[3] The images are invariably made to knock down all the plants of an imitated cornfield set up in clay pedestals before them. These plants are thereupon distributed to the women and girls present.[4] Fewkes thinks that we are here dealing with a representation of the destructive power of nature, which lays waste to the fields. This is not consistent, I believe, with the apparent value attached to the plants knocked over. An association with the lightning that strikes the cornfield—a phenomenon avowedly regarded by the Hopi as the acme of fertilization—seems much more comprehensible to me. If the etymology given by Fewkes for Palülükoñ[5] be correct then it is quite possible that -koñ (to strike down with ripeness) refers to this characteristic.

In the Pueblo culture there is doubtlessly a general interrelation between the moon and the idea of fertilization, corresponding to that of growth and water.[6] That this should be the case is not

[1] 28, p. 622 et seq.

[2] 80, p. 29.

[3] 28, p. 622; 29, p. 277–8.

[4] 28, p. 608–9, 615, 617; 29, p. 280.

[5] 29, p. 282.

[6] According to Lummis (69, p. 58) the Tewa name for the moon is literally "Water-Maiden."

surprising after our discussions of the relation of the moon to the earth. Furthermore, the association of the moon with fertility is a common phenomenon in many parts of the world. For our present considerations it is of especial interest that the moon is unequivocally associated in a specific way with the serpent. The *tertium quid* of this association is doubtlessly the idea of fertilization. An instructive case in point is a screen used in the Oraibi Soyal ceremony. Voth gives the following description of its symbolism:—

> The figure in the center represents Müyiñwû, the god of germination. He holds in his right hand a growing cornstalk. . . . Over his head are symbols of clouds with falling rain and rays of lightning. . . . Under the cornstalk is the symbol of the moon, on the other side that of the sun. The semicircles on top are covered with cotton, to both sides are fastened four artificial blossoms, to the lower part watermelon, muskmelon, squash, cotton, pumpkin and other seeds and different kinds of corn.[1]

The figure of the moon, from which the cornstalk held by Müyiñwû seems to be growing, shows a drawing of the serpent on its disk. A song to the great water serpent is sung before this screen. An important rite consists in ceremonially scraping the seeds attached to the screen into a tray.[2] I believe all these various incidents speak for themselves.

In the Walpi Soyal ceremony the screen is missing. Instead we have there the rites already alluded to with the image of the serpent.

In the initiation ceremony of the Oraibi Powamu[3] the same moon-serpent symbolism is used in connection with the "*pota*."

> This consists of round discs, each of which is made of two sticks bent into a semicircle and over which is stretched a piece of owa (canvas). These discs are sewn together in the middle in such a manner that they can be opened and closed like a book.[4]

A dance is performed before the novices in which the different segments of the *pota* are opened successively so that the various symbols drawn on these segments become visible.[5] They are reproduced by Voth.[6] All of them obviously pertain to fertility.

[1] 91, Plate 28.

[2] 91, p. 53.

[3] According to Mindeleff (75, p. 129) "Powamu" means "fructifying moon."

[4] 88, p. 89.

[5] 88, p. 92.

[6] 88, Plate 48.

They consist of symbols of squash blossoms,[1] clouds, and corn ears. One segment is expressly called the moon and consists of the same symbol as the moon on the screen described above, having a serpent-like animal drawn in the shape of a semicircle in the disk.

Corresponding to the idea of the emergence of the people from the underworld, the one of the dead returning to the place of emergence is quite common in the Southwest, if not indeed general. It is well known from the Navajo[2] and Apache.[3] Among the Pueblo[4] it stands out prominently and, what is especially interesting, has become associated with the idea of fertilization. The traditional *sipapu* is, as said before, in some cases conceived as a lake or a *lagune*. In such cases the dead are thought to return to their home in the lake.[5] The *sipapu* or the lake is, however, not

[1] The squash blossom symbol consists of a circle divided into eight sectors. It is also quite frequent in Zuñi, where it is painted, for example, on the sides of the masks of the Sälämobiya, the "Seed-gatherers" of the six regions. See 83, Plate 21.

[2] 70, p. 38.

[3] 58, p. 194; 79, p. 255.

[4] 61, p. 299. Dr. Spinden kindly gave me the following information concerning the Rio Grande Tewa: "The dead return to the underworld through the great *sipapu* or one of the numerous smaller entrances."

[5] 1, p. 315; the dead of the Jemez return to the *lagune*. According to the Zuñi emergence and migration myth recorded by Mrs. Stevenson the traditional *sipapu* and the sacred lake, Kothluwalawa, are not identical. This lake was created magically by Siwulutsiwa after his unlawful connubium with his sister (see 85, p. 32–33; 7, p. 404–5). When the Zuñi some time *after* their emergence came to this lake, various clans dropped their children into its waters. The children at once were deified and became Kokko. Their home is in the lake and is not only the place of the dead, but also that of the unborn (Cushing). This is in contradiction to the other Zuñi notion, that the dead, upon reaching the lake, "descends the mystic ladder to meet the Council of the Gods, and *thence passes* on to the undermost world, the place of Zuñi nativity" (85, p. 307–8). From this obvious contradiction, as well as from the general identification of the *sipapu* or lake and the place of the dead in an area continuous to that of the Zuñi, I judge that we are justified in also identifying Kothluwalawa with the real place of emergence of the Zuñi and thus in regarding the Zuñi migration myth of today as involving a secondary and inconsistent complication.

The change that has taken place can probably be ascertained by comparing the Zuñi with the Navajo version of the emergence and migration myth. These are even in details strikingly similar. From a comparison it would appear that that part of the Zuñi version which recounts the events from the emergence to the crossing of Kothluwalawa, originally took place in the last underworld, so that the events at Kothluwalawa would correspond to the emergence to the uppermost world. Thus, the motive of the blood-crime of a brother and a sister and of the birth of their defective children,

only the place of the dead, but also that of the unborn.[1] This strengthens the supposition of a physiological association of the *sipapu*.

Another cycle of associations deserves being mentioned at this place. When one considers that "the Hopi connects the idea of life with the east, death with the west,"[2] that every newborn baby must be shown to the rising sun, that the dead of the Hopi travel westward, and finally that the sun in the evening descends into the underworld by way of the *sipapu* of the kiva of the Earth-goddess, it seems warranted to suppose that there is a certain parallelism in the mind of the natives between the fates of the sun and those of the individual. The sun and the individual both return through the *sipapu* to the underworld whence they came.[3] The association is obvious and, at least as far as the Hopi are concerned, is borne out by the empirical data. It would be premature to be more specific in our statements, on account of the incompleteness of our own information and on account of the probable vagueness of the association in the mind of the natives themselves.

Since the dead return to the underworld and the underworld is the place of germination, it is not surprising that in a culture like that of the Pueblo, where almost every cultural phenomenon seems to be focused on the idea of fertilization, the deceased and especially the ancients should likewise have become associated with this idea.[4] This is brought out in the well-known Katcina worship of the Pueblo. From the ideas we find associated with this worship today we cannot, of course, draw any inferences whatsoever as to its probable origin or its historical development. But the associations themselves offer a psychological problem.

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a motive almost identical in both versions, takes place in the Zuñi version on the surface of the earth and before the lake episode, while according to the Navajo version in the last underworld before the emergence (see Matthews: Navaho Legends).

[1] 32, p. 162.

[2] 90, p. 311, and 88, p. 103.

[3] According to Fewkes the underworld is the house of the sun and the earth-goddess. "Here are generated the souls of the newly born on earth, and to this home of the Sun return the spirits of the dead." See 40, p. 86.

[4] 91, p. 57 (footnote): Pahos are made for the deceased, so that they may send good crops to the living.

The Katcinas of the Hopi are the deified spirits of the ancients who now work for the good of the present generations.[1] The usual idea seems to be that the Katcinas are rain-makers. "You have become a Katcina: bring us rain," say the relatives of the deceased to the dead, before they inter them.[2] Correspondingly, "the deceased Zuñi become rain-makers, and are at the command of the council of the gods."[3] The Zuñi claim that they always buried their dead. They insist that should they incinerate the bodies, there would be no rain, for their dead are the *uwannami* (rain-makers)."[4] The Zuñi Kokko, who correspond to the Hopi Katcinas, are the deified ancients of the Kotikili and are thought to reside in the sacred lake. They are children of certain Zuñi clans and were dropped into the water of Kothluwalawa when their mothers crossed this lake in the mythic times. These Kokko or ancients intercede with the gods that they may send rain and fertility to the people.[5] The Korkokshi who belong to the Kokko are "dancers for good," i. e., for rain.[6]

The Katcinas of the Rio Grande Tewa are evidently conceived in a way similar to those of the Hopi and Zuñi. Dr. Spinden kindly gave me the following information concerning them:—

The Katcinas, or 'Okhuwa, as they are called in Tewa, are primarily those of the first people who did not come out of the underworld with P'o seyemu. The dead return to become 'Okhuwa and the child is an 'Okhuwa until four days old—or until the christening. The 'Okhuwa are probably to be regarded as ancestral spirits. The word is very like the ordinary word for "cloud" and the 'Okhuwa live in the clouds as well as in the underworld. Their function is connected with rain and fertilization. When the 'Okhuwa come to bring seeds and rain they come out of a lake.

The Hopi regard the earth-goddess, Hahaiwuqti, as the mother of the Katcinas.[7] The Sia Katcinas are created in the underworld by Utset, obviously likewise an earth-goddess. After the emergence Utset sent them to live in the west.[8]

[1] 31, p. 130; 27, p. 351; 6, p. 189.
[2] 40, p. 82; 32, p. 162; 39, p. 443 (footnote).
[3] 84, p. 40.
[4] 85, p. 305.
[5] 83, p. 541–2; 6, p. 189.
[6] 85, p. 63.
[7] 96, p. 266; 34, p. 49; 51, p. 178.
[8] 82, p. 116–7.

The Katcinas are thought to be present in the villages of the Hopi from midwinter until July. During this time they are represented by masked personators in the so-called Katcina dances. They depart for the year after the Niman ceremony. The personators leave the village and proceed towards the west, since the Katcinas are now supposed to return to the underworld, "the entrance to which is the sun house in the west." [1]

While the place where the sun sets is so to say, the traditional home of the Katcinas, it is not the only locality with which the same idea is associated. We have already mentioned the identification of the different "*sipapus*." Thus the Rain-makers of the Zuñi are thought of as living in the underworld below the *sipapu* of the ceremonial chamber.[2] Through this opening they are supposed to come up.[3] (See above: Müyiñwû, the God of Germination, also lives under the *sipapu* of the kivas and sends through it the germs of all living things.)

Illustrative of the ideas regarding the nature of the Katcinas is a rite performed in the Walpi New Fire ceremony. In this a procession of the phallic societies of Tataukyamu and Wüwütcimtu proceeds to the site of ruined Old Walpi, the abode of the ancestors of the present Walpians. At least in the rite referred to, this site is regarded as one great *sipapu*, under which the ancients, the ancestors of the present Hopi, now live as Katcinas.

Patting his foot on the ground, one of the men in the procession said, pointing downward, "Here, just below here, the old people dwell. We are now," he continued, "praying to them for material prosperity—rain, health, abundant harvest.[4]

The psychologically important point brought out by this rite is that the abode of the Katcinas may also be located, by a clear series of associations, in the old historical homes of the natives.

[1] 27, p. 366; 40, p. 91.

[2] The Tewa of the Rio Grande seem to have an idea very closely analogous to the one in question. Dr. Spinden writes me: "The Tewa *na"si pu phendi'i* is a lake in the north out of which grew a pine tree. In the center of each plaza is a shrine which represents it. When P'o seyemu first came out he found the earth good and he danced. The people below heard him and for that reason they now dance near this shrine that the people below can hear them."

[3] 85, p. 146.

[4] 35, p. 96; 36, p. 526–7.

By this association the old ruins gain especial sacredness in the cults of fertilization. The fact that phallic societies perform the rite mentioned above is very likely not accidental.

In order to avoid misrepresentations it is necessary to say that, while the ideas outlined above seem to be an essential part of the Pueblo Katcina worship, by far not all of the beings that appear in the Katcina dances as we see them them today can be interpreted as deified ancestors. The Katcinas are a most heterogeneous crowd.[1] The investigation of the origin and development of the Katcina cults and of the phenomena of assimilation and reinterpretation which have doubtlessly taken place, as well as the discrimination of primary and secondary elements necessarily fall outside of the scope of our considerations.

The most conspicuous mythological cycle of the Southwest is that referring to the Twin War Gods. This cycle of myths seems to be most elaborately developed by the various Pueblo peoples and by the Navajo. The following gives in a general way the essential elements. The sun impregnates by magical means a woman, who is obviously an Earth-goddess. She gives birth to twins, who mature rapidly, but always remain diminutive. They go to visit their father, the Sun; after subjecting them to a series of ordeals, he gives them the weapons of war; with these the boys rid the earth of monsters.

This myth or cycle of myths is characteristically Southwestern and thus distinct from the twin-hero tales of the Plains, namely the cycle of Lodge-Boy and Thrown-Away.[2] I do not mean to doubt that there are elements common to both cycles, as Lowie has pointed out,[3] but the general associations of events and ideas are unmistakably distinct. In the Northern Shoshoni[4] and Blackfoot[5] versions of the Plains a strange visitor kills the mother of the boys and then takes them out of her womb. While the boys are playing hoop-and-pole, the father forbids them to roll the hoop in a certain

[1] 26, p. 16; 40, p. 83.
[2] 66, p. 139–143.
[3] 66, p. 119.
[4] 65, p. 280 et seq.
[5] 95, p. 40–53.

direction. The boys disobey and the hoop rolls on and on until it reaches a cannibal, who fails in his attempt to destroy the boys.

According to Goddard, the San Carlos and Mescalero Apache have practically the same hero cycle as the Navajo.[1] The versions of the Jicarilla Apache, however, show interesting fusions of elements from the Southwest and from the Plains. Thus the genesis of the boys,[2] their visit to their father, the Sun, and the jealousy of his wife[3] are clearly identifiable with the Pueblo-Navajo versions. But associated with these elements we find that of the hoop rolling to a cannibal, which is identical with the corresponding part of the Blackfoot myth, and that of the rolling rock, which is so typical of the Plains.[4] These transitional forms of the Jicarilla mythology are interesting, but not surprising, when one considers that the Jicarilla undertook regular and extensive hunting trips out into the Plains. Much of their material culture also points to the Plains, such as their tipis, beadwork, and parfleches.

After this brief general survey, let us return to the Pueblo-Navajo hero myth. According to the Sia version, a virgin, the daughter of Spider Woman, is embraced by the Sun. She gives birth to two boys, Ma-a-sewe and Uyuuyewe.[5] In the Navajo version the twins are born by two sisters, Estsanatlehi, "the Woman Who Changes," and "White Shell Woman." The one becomes pregnant from the rays of the rising sun, the other from the water of a waterfall.[6] In the Tusayan version the War Gods are "conceived by an Earth-goddess, one by a ray of sunlight, and one by a jet of water."[7] The Zuñi myth of Cushing lets some foam of water, impregnated by the sun, give birth to the twins.[8] The

[1] 59, p. 386.
[2] 76, p. 200.
[3] 58, p. 196.
[4] 76, p. 208.
[5] 82, p. 43.
[6] 70, p. 105–6.
[7] 46, p. 132.
[8] 8, p. 1–2; 7, p. 381–2. Possibly the idea of the impregnation of water by the sun corresponds to the ceremonial act of reflecting a sunbeam into the water of a medicine-bowl by means of a crystal.—a rite commonly reported from Tusayan. The liquid of these bowls is whipped to foam.

version related by Mrs. Stevenson is somewhat complicated by the fact that there are two generations of twins. At a certain point in the migration myths the second generation takes the place of the first one without any obvious motive.[1]

The fact that in some versions the earth-goddess herself ("Woman who Changes," Spider Woman, etc.), in others, her daughter is the mother of the twins is certainly of no importance, just as among the San Carlos Apache the "Woman Who Changes" is sometimes the mother of the wife of the sun, sometimes his wife herself.[2] The mode of genesis of the twins, as related in the versions cited above, is doubtlessly associated with the idea of the fertilization of the earth by the sun and by water. Whether this association is a primary feature of the myth cycle in question, I do not venture to decide. It is certainly typical of the Pueblo and not of the Navajo and Apache, for, judging from what we know of these peoples, we assume that they either borrowed the myths of the Twin War Gods passively from the Pueblo or modified their own myths by assimilating Pueblo elements.

The two boys, wishing to become acquainted with their father, visit him in his sun-house. They, of course, survive the ordeals they are subjected to and thus prove themselves to be the real children of the sun. Whereupon, their father presents them with the typical weapons of war, bows, arrows, and shields. Thus equipped, they set out to destroy the enemies of mankind. According to most versions, this is clearly their *raison d'être*. They overcome the monsters who have been harassing the people,[3] rescue maidens from the clutches of cannibals,[4] and perform many similar acts of heroism.

Some Zuñi myths also relate how the sun sent the twins into the earth to lead the people forth to the surface. "The two rent the earth with their lightning arrows and descended into Fourth World."[5] Then, according to Cushing, they guided the people

[1] 85, p. 24, 35, 407.

[2] Personal information from Dr. Goddard.

[3] 82, p. 45 et seq.; 89, p. 82; 2, p. 587.

[4] 11, p. 365 et seq.; 69, p. 200.

[5] 84, p. 34.

through the various stages of gestation and parturition.[1] Since the Twin War Gods are constantly associated with lightning, the question arises, whether in this feature there is a suggestion of the fertilization of the earth by the lightning resulting in the birth of mankind. The records of Mrs. Stevenson and Cushing are certainly suggestive of this association. On account of the fragmentary nature of the Zuñi material, however, we can say nothing definitely. It is certainly an interesting question for future investigation.

When speaking of the Hopi war gods, of Püükon and his less important brother, it is necessary to bear in mind that corresponding to the multiplicity of Hopi Earth-goddesses, who are all more or less identical, there is also a multiplicity of culture-heroes of the type in question. This is probably due to the development of esoteric mythologies, which after all do not seem to surpass the limited wealth of motives extant in the general mythology of the people. Alosaka, for example, is the culture hero of the Aaltû society. He is said "to have been miraculously born of a virgin. His father was the Sun, his mother an earth-goddess, sometimes called a maiden. Like many gods, he travelled on the rainbow."[2] The identity with Püükon is unmistakable. In addition to the coincidence of mythological motives, these counterparts of Püükon are identified by their associations with the idea of fertilization.

The heterogeneity of the associations of the Twin War Gods is from a psychological point of view an important consideration in the discussion of these beings. They are war gods par excellence but are at the same time intrinsically associated with fertilization. This duality of their functions is characteristic of Pueblo culture and speaks for the occurrence of secondary associations.

The warrior nature of the twins is a marked feature of the Pueblo myths, probably especially of the Zuñi migration myths. In the ceremonial life it is also prominent, for example, in the war festivals of Tusayan.[3] The dual nature of their associations is brought out clearly by contrast in the case of the Warrior society[4]

[1] 7, p. 382–3.
[2] 36, p. 539.
[3] 43, p. 482–94.
[4] 82, p. 121 et seq.

and the Knife society[1] of the Sia. These societies are closely allied and both are directly associated with the Twin War Gods. Nevertheless, such diverse performances as war dances with scalps and ceremonials for rain characterize them.

Like the Sia Society of Warriors, the Zuñi Priests of the Bow regard themselves as the direct successors of the Twin War Gods, the organizers of their society.[2] That this Zuñi society is really one of warriors is proven by the fact that before the cessation of intertribal war the killing of an enemy and the taking of his scalp was necessary for admission.[3] At the same time, we find that the Priests of the Bow, by far the most prominent of Zuñi societies, are everywhere unmistakably associated with the idea of rain and thus of fertility. This dominant power in Zuñi is composed of the elder and younger Bow priests, who are the direct representatives of the Twin War Gods, six Ashiwanni, Rain-priests, and one woman, Shiwanokia, the Priestess of Fecundity.[4] This composition of the society is significant. The lightning-makers of the six regions, the deities of the fertilizing rains, are deceased Bow priests.[5] (Compare the corresponding idea associated with the Katcina worship.)

The Keres believe that the meeting of the Twin War Gods in the clouds causes rain to fall. They are personified in the war captain and his lieutenant.[6] In Zuñi idols of the War Gods are regarded effective in a similar way. Ceremonies are performed before them "that they may intercede with the rain-makers for rains to fructify the earth."[7] The idols found in the shrines on the sacred mesa near Zuñi are significant.[8] A specimen in the Berlin Museum (No. IV, C. 7117) has been reproduced and described by Cushing.[9] The head of this idol is covered with a white cone-

[1] 82, p. 101 et seq.

[2] 85, p. 576.

[3] 85, p. 578. In the Berlin Musuem (No. IV C7149) there is a symbolic shield used in the sacred war dance by the Priests of the Bow. It is characteristic that a prominent symbol of this shield is the Great Water Serpent painted on it.

[4] 85, p. 289.

[5] 85, p. 110 and p. 149.

[6] 1, p. 289.

[7] 85, p. 116.

[8] 85, plates 137–9.

[9] 10, p. 2.

shaped cap called the cap of fog or clouds. A lightning shaft shoots out of the apex of the cap. A noteworthy feature is the

serrated projection from the umbilicus to which plumes are attached, symbolic of clouds and lightning. All varieties of seeds are deposited in the cavity before the projection is inserted.[1]

Cushing and Mrs. Stevenson call it the navel.[2] Judging from other phenomena in the culture of the Pueblo, one would be inclined to speak rather of a phallic significance. However this may be, the association of the idol of the War God with fertilization is evident.

Among the Hopi the Society of the Kalektaka or Warriors corresponds to the Zuñi Priesthood of the Bow, without, however, exercising authoritative control of the whole ceremonial life as among the Zuñi. It is likewise a real warrior society and has its special war ceremony.[3] Püükon [4] is their culture hero and his image is in the care of the chief of this society.[5] It is almost needless to say that this society, like all other Hopi societies, is in addition to its martial functions constantly bent on the production of fertility.

According to Voth [6] the members of the Snake society are also kalektakas. Fewkes speaks only of one man who in the Snake-Antelope ceremony personates "a kalektaka, or warrior, or Püükon."[7]

One of the most conspicuous men in the line of Snake priests personified a warrior, who wore on his head a closefitting, open-mesh, cotton skull-cap, which represents the ancient war-bonnet.[8]

This kalektaka, in the snake dance proper, sits in the kisi and hands out the snakes to the dancers. This specific rite, like all others of the Snake-Antelope ceremony, is certainly associated with the idea of rain and fertilization. The kalektaka is always represented as twirling the bull-roarer, which among the Pueblo is a magic instrument for producing rain.

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[1] 85, p. 113.

[2] 85, p. 607.

[3] 26, p. 25.

[4] The brother of Püükon, although known and often referred to in Hopi mythology, in the ceremonies plays a rôle very inconspicuous in comparison to that of his elder brother.

[5] 38, p. 7.

[6] 90, p. 343.

[7] 44, p. 985.

[8] 44, p. 975.

Nowhere does the assimilation of the war-gods and of their representatives, the warriors, by the idea of fertilization appear more clearly than in the case of their weapons. In the myths the war-gods receive from their father the bow and arrows or lightning bolts as real weapons of war, to be used in their fight against enemies and monsters. In the ceremonies, however, we find just the reverse associations with lightning; there the lightning is not the destructive arrow of war, but the rain-bringing, fertilizing phenomenon. It is ceremonially represented by the lightning frame. The association of this device with the idea of fertilization is borne out by the facts. Thus in the Hopi Palülükoñti ceremony personators of the cloud deities, besides asperging the women and throwing water upon the hatchway of the kivas, shoot their lightning frames down into each kiva.[1] In the Hopi ceremony of Coyohim-katcina ("All-katcina") a personator of Püükon uses the bull-roarer and the lightning frame.[2] In the Walpi and Mishongnovi Snake-Antelope ceremony the kalektakas, besides twirling their bull-roarers, as stated above, also shoot off lightning frames.[3] In the Oraibi Snake altar these objects lie before the figure of Püükon.[4]

The shield of the war-gods still remains to be spoken of. According to the Zuñi myths it is spun of clouds resembling cotton.[5] In the ceremonies this shield is represented by hoops with cotton netting. As will be discussed in the following pages, these netted wheels have an extensive ceremonial use and are in the mind of the Pueblo specifically associated with rain and fertility. The Hopi and Zuñi images of the war-gods are supplied with such a shield consisting of a netted wheel. Either it is made to hang over the back of the image or the image stands on it.[6]

The offering of the Zuñi Priests of the Bow to the war-gods

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[1] 29, p. 278.

[2] 38, p. 66–7.

[3] 12, p. 228.

[4] 90, p. 287–8.

[5] 84, p. 34; 9, p. 52. Unspun cotton is commonly used in Pueblo ceremonies to represent clouds.

[6] 88, p. 77; 90, p. 287–8; 85, p. 113.

consists of a stick to which a netted wheel and small bow and arrows are attached.[1] This is a petition for rain. The Huichol of northern Mexico, whose sacrificial arrows[2] are genetically clearly related to the offerings of the Pueblo, make a sacrifice to their god "Great-grandfather-Deer-Tail," which consists of an arrow and an attached netted hoop,[3] and is thus morphologically parallel to the typical offering of the Zuñi Priests of the Bow. The Huichol, however, do not associate this hoop with the cloud shield of the Twin War Gods, although beings of a corresponding type are represented in their mythology, but interpret it as "a snare for killing deer." The object of this petition of the Huichol is obvious. We are here dealing with a clear case of discrepancy in the distribution of the objective features of a cultural phenomenon and of its psychological associations. The specific associations of the hoop, that are characteristic of the Hopi and Zuñi in contradistinction to its associations among other tribes, warrant the reality of the definite and typical psychological attitude of the people under consideration,—an attitude which may be roughly characterized by the idea of fertilization.

Of equal psychological significance, as the fusion of the myth motives of the Twin War Gods with the idea of fertilization in the culture of the Pueblo, is the lack of such associations in the Navajo culture. Although the mythological traits and actions of the Navajo Twin War Gods are identical with those of the Hopi and Zuñi myths and although these beings are personated in the Navajo ceremonies, the religious associations into which they enter are fundamentally different from those characteristic of the Pueblo. Speaking of the Elder God of War Matthews says:—

> When properly propitiated, he is prompt to cure disease, particularly such as is produced by witchcraft. Men in danger, and warriors going to battle, pray and sing to him.[4]

In correspondence to what is avowedly the fundamental tone of Navajo ceremonial life in general, the associations of the war-gods

[1] 41, p. 92–3.
[2] 77, p. 100–2.
[3] 68, p. 94, 103–5.
[4] 71, p. 20.

seem to pertain to the healing of the sick. This is brought out by the prayers and the rites around the patient.[1] The question, why the Navajo, who have doubtlessly borrowed the myth motives of the war-gods from the Pueblo, did not also borrow the associated ceremonial concepts, is a problem of the psychology of acculturation, which is only soluble by an analysis of the specific historical and psychological phenomena involved.

The wheel or hoop with its extensive ceremonial use among the Pueblo lends itself readily for a concrete demonstration of the points brought out in this paper. Hence it deserves a detailed discussion. The hoop used in a Zuñi ceremony for rain is spoken of by Mrs. Stevenson as a world symbol.[2] This symbolic meaning seems to be supported by the fact that in Tusayan clan signs of the earth consist of a circle.[3] Furthermore, in Southern California,[4] the same world symbol is used in the initiation ceremonies and among the Tarahumare [5] is associated with the peyote cult. While this specific symbolic significance of the wheel seems suggestive when taken in connection with the obvious association of the wheel to the female sex and its alleged physiological association, it certainly does not by means of a premature generalization admit of a genetic interpretation as to the origin of the wheel any more than does the association of the wheel with the shield of the war-god. The interpretation given by the Hopi of today of the wheels and the cylinders that are commonly associated with them is that they represent the small clay rolls that the rain water forms in the washes.

They are considered to be special prayer offerings that the washes may rise and flood their thirsty fields.[6]

In spite of the secondary nature of this Indian interpretation, it is significant as showing the conscious association of the wheels and cylinders with rain and fertility in the mind of the present natives.

In the case of the Antelope altar of the Walpi Snake-Antelope

[1] 71, p. 84–5, 138–9, 303.
[2] 85, p. 198.
[3] 36, p. 526; 45, p. 5; 48, p. 410.
[4] 94, p. 300 et seq.; 19, p. 177–8.
[5] 67, vol. I, p. 365.
[6] 90, p. 314; 12, p. 235.

ceremony we find an interesting association of the cylinders and wheels with the sexes. In the sand-painting of this altar four lightning-snakes are depicted as shooting out from rain-clouds. Those of the north and south are male and those of the east and west female. A small black cylinder of wood is laid on the head of each male snake and an annulet made of a flag-leaf on the head of each female snake.[1]

The idea of fertilization appears furthermore in the following phase of the Oraibi Snake ceremony. On the seventh day of the rites the Antelope chief prepares two small black cylinders like those of the Walpi altar. He also makes two wheels of the leaves of the "wipo" (flag), a species of reed found near springs and *lagunes*.[2] One cylinder and one wheel were tied to each of two black sticks (chochokpi).[3] During the races, which take place at sunrise of the of the eighth and ninth days, a water vessel, which has been previously filled at a spring, and a chochokpi with its cylinder and wheel are passed on in such a way that they are always carried by the runner who happens to lead. The final winner runs into the Antelope kiva with the objects. Here the Antelope and Snake chiefs pray over the netted gourd and the chochokpi. These are then handed back to the winner, who takes them down to his fields, digs a hole, pours the water of the gourd into it and buries his cylinder and wheel.[4] This is considered to be a special blessing for the fields.

Racing of various kinds is a common feature of American tribal life. Their specific associations in the Pueblo area are of special interest to us. Ceremonial races for rain and fertility stand out very prominently in the religious life of the Pueblo. The Zuñi race with wooden cylinders that resemble the Hopi cylinders just described. Ceremonial races of this kind "take place some days previous to corn planting."[5] They "are for rains to water the

[1] 37, p. 21.

[2] Flags of this kind are also used ceremonially in the rain dances of the Zuñi. See 42, p. 26.

[3] 90, p. 317.

[4] 90, p. 325–7. A similar race takes place in the Mishongnovi Snake-Antelope ceremony. A ring plays the same rôle and is deposited by the winner in his field. The runners start from four conventionalized cloud-and-rain symbols drawn in meal upon the ground. See 12, p. 230–3.

[5] 85, p. 318–21; 60, p. 227.

earth that the crops may grow."[1] The races are accompanied by prayers to the rain-makers. In another Zuñi race clowns, or "mud-heads," and women take part as rivals. The men race with a kicking-billet, while the women toss a ring.[2] "This game is played only by order of the Great Father Koyemshi, and is used exclusively to bring rain."[3] The Keres have a race in which two billets are kicked. The one is called a "man," the other "woman." This game is played for rain. "The winning stick is buried in a corn-field."[4]

In passing, it is interesting to state that in addition to the instances mentioned other American games, themselves in no way characteristic of the Pueblo, are among these people likewise ceremonially associated with the production of rain and fertility. This is the case, for example, with the Zuñi dice game described by Mrs. Stevenson.[5] As Dr. Spinden kindly informs me, the great ceremonial game of the Rio Grande Tewa connected with germination is the shinney game.

In the Hopi Flute ceremony the cylinder and annulet or wheel are important ceremonial features. This ceremony is, as is well-known, complementary to the Snake-Antelope ceremony, with which it alternates annually. The desire for rain as the controlling motive of the ceremony appears not only in its correlation to the Snake-Antelope ceremony, but also by virtue of its own features.

In the Walpi Flute ceremony the Flute Priests, led by their chief, leave the village on the seventh day. They take with them paho-offerings as well as cylinders and annulets. At various springs they deposit the pahos and, after having stayed out all night, start back for the village on the following day. At the entrance of the village they encounter a line of meal placed across the trail. This is the symbolic way of closing the trail. The Flutes meet the Bear Chief and the Antelope-Snake Chief, who stand on the other side of the line of meal with a boy and two girls. The Flutes wish to enter

[1] 86, p. 469.
[2] 86, p. 493–4; 5, p. 696–7.
[3] 85, p. 345–6.
[4] 5, p. 668.
[5] 85, p. 328 et seq.; 86, p. 480 et seq.

the village. The Bear Chief replies that if the Flutes are the good people they pretend to be, they can bring rain. Thereupon the Flute Chief gives to the boy a cylinder on a stick and to each girl an annulet. The cylinder and the annulets correspond exactly to those used in the Snake-Antelope ceremony. The trail is now "opened" by erasing the obstructive line of meal and the Flute band enters the village.[1] Fewkes considers this rite to be a dramatization of a purely historical event, namely of the coming of the Flute people to Old Walpi and their reception by the Bears and Snakes.[2] If this really should be the correct genetical explanation, the prominence of the secondary assimilation of the idea of fertilization would be all the more remarkable. The symbolic significance of the rites in question is, aside from what may have given the primary historical impetus, quite unequivocal.

The magical meaning of the annulets used in the Flute ceremony is also brought out by the fact that one or more live water-insects are bound into the flag-leaves of which they are made.[3] The same trend of associations is evidently involved, when duck feathers are attached to the cylinders and rings, the duck being conceived by the Hopi as a rain-bringing animal.

On the ninth day of the Walpi Flute observance a boy personating Alosaka, the counterpart, as we have seen, of Püükon, the war-god, two Flute girls, one Flute boy, several priests, and a warrior go to Tawapa ("Sun-spring"). Here one of the priests wades into the water, plants a paho in the bed of the spring, and brings out a handful of mud. This he smears on the cylinder and annulets, which have been whitened before the band left the kiva. Mud and dirt have for the Hopi an association with fertility, as might be demonstrated in detail in a discussion of the clowns or "mud-heads" and their various rites. When departing from the spring, Alosaka draws four cloud symbols in meal on the ground. The procession proceeds from one symbol to the next led by the two Flute girls and the one Flute boy. The girls carry each an

[1] 53, p. 281–3.

[2] 53, p. 287; 47, p. 591–2; 48, p. 401.

[3] 38, p. 131–2.

annulet on a stick, the boy carries a cylinder. The children advance by throwing their respective objects upon a meal symbol, picking them up and then proceeding to the next symbol to repeat the performance. The rest follow. As the procession marches to the village, it halts at intervals to repeat the performance. At the so-called "kisi" in the village plaza the final act of the whole Flute ceremony takes place. The kisi is a lodge made of cottonwood boughs. Here the procession halts and sings. The participants close the performance by depositing offerings, gourd vessels filled at the spring, and the cylinder and annulets just discussed in the kisi-shrine.[1] It is important to mention that the kisi is erected over the plaza shrine, since this shrine is spoken of as an entrance to the underworld. This reminds us of what has already been said of the underworld as the place of fertility and the abode of the gods of germination, to which ceremonial *sipapus* and springs offer a passage of communication.

The Shipaulovi variation of the spring and kisi rite of the Flute ceremony is equally suggestive. Before the procession to the village, a priest personating Omowûh, the God of Rain-clouds, merges into the spring, plants pahos in the bed thereof, and brings up two bundles, which have been deposited there at a previous occasion. The contents of each bundle are as follows: "a planting-stick, three long black pahos, two annulets, one cylinder, two spherical water gourds with a string netting."[2] These objects are, like at Walpi, deposited in the kisi by Omowûh.[3]

Similar offerings are made in the one day ceremony (*tawa baholawu*) of the Oraibi Drab Flute society. At this occasion imitated corn-ears, pahos, food-balls, black annulets and black cylinders with attached duck feathers are deposited at various shrines and springs.[4]

Since springs and at least some of the shrines are regarded as passages to the underworld, as *sipapus* in the broader sense of the word, I cannot help but correlate directly the various offerings just

[1] 53, p. 285–6; 21, p. 141.
[2] 38, p. 137.
[3] 38, p. 147.
[4] 93, p. 129–33.

described with those that are deposited in the *sipapu* of the ceremonial chambers. Essentially the same concepts seem to be involved as when the Zuñi deposit a diminutive dart and ring game,[1] grains of corn, and squash and melon seeds in the *sipapu* of a ceremonial chamber and pray for rain, prosperity and general well-being.[2]

The final act of the Hopi Niman Katcina is of interest with reference to the ceremonial use of the cylinder and annulet, as well as to the idea of the *sipapu*. The Niman is the last Katcina ceremony of the year. In fact, it celebrates the annual departure of the Katcinas from the Hopi villages. The Katcina, the clan-ancients and workers for fertilization are supposed to stay with the Hopi from the winter to July. They are led back to their traditional home by their leader, Eototo, the germ god, the ruler of the underworld. Personators dramatize this departure by leaving the village over the western trail, which is supposed to lead to the traditional home of the Katcinas, the entrance to the underworld and the place where the sun sets.[3]

During the early part of the Niman small black cylinders and annulets like those of the Flute ceremony are made. The cylinders are tied to the wrists of the Heheakatcinas[4] in the public dances.[5] The annulets are used in the final rites under discussion.[6] After cloud symbols have been drawn at the hatchway of the main kiva, Eototo, carrying a planting-stick, and three Katcinas enter the plaza at sunrise and take a stand at the four sides of the sky-hole of the kiva. One of the priests of the kiva stands on the ladder, being only partly emerged from the hatchway. He throws sacred meal towards the north where Eototo stands. When the meal touches his garment, Eototo lays his annulet on a cloud symbol. After repeated sprinkling of meal by the priest, Eototo finally

[1] This game, as we shall see presently, is played ceremonially for rain and fertility.

[2] 85, p. 247.

[3] 49, p. 19–20.

[4] These Katcinas have a marked phallic association.

[5] 38, p. 72.

[6] The observations of Fewkes were made in Walpi and Shipaulovi and are complementary: see 38, p. 89 et seq., and p. 100 et seq.

passes the ring down into the kiva. The same performance is repeated towards the other three sides where the Katcinas stand. The annulet offerings are laid before the altar. The whole series of performances is then repeated with water which the men outside pour into a bowl held by the man on the ladder. In return pahos are offered to Eototo and the Katcinas. During all this time two priests down in the kiva sit by the *sipapu*, the opening to the underworld, chant, rattle, and occasionally knock on this sacred orifice.

In the Tusayan Mamzrauti ceremony a paho consisting of a black stick to which a black annulet of twisted flag-leaves is attached is thrown into a spring. It is said to be an offering to Müyiñwû, the God of Germination.[1]

In the preceding discussions we have repeatedly spoken of small cylinders and their associations among the Hopi with the idea of fertilization. They are frequently, as we have seen, associated complementarily according to sex with annulets or wheels. This association, interesting as it may be psychologically, reveals no evidence with reference to the historical genesis of the phenomena. The cylinders are also used alone as kicking billets in races for rain and the wheels are likewise used independently. We have no evidence whatsoever for the historical genesis of either cylinder or annulet. On the other hand, however, we have direct evidence of the psychological associations pertaining to them among different tribes. This objective evidence shows that morphologically similar and obviously diffused cultural phenomena, such as the wheel, are assimilated in different cultural units by different psychological concepts and that the acculturation is determined by the quality of the setting of the individual cultural unit. We have already mentioned the association of the wheel among the Huichol with the chase. The Navajo associate it with the healing of the sick.[2] The corresponding Hopi and Zuñi concepts have been discussed in detail.

The same point appears with great clearness in the case of the dart and hoop game. This game has a huge area of distribution in

[1] 24, p. 228–9.

[2] 81, p. 238.

America, as described by Culin.[1] Due to the relative complexity of the phenomenon and the continuity of its occurrence, no one doubts the historical homogeneity of the game even if it be found among so many heterogeneous American tribes.

Can we find an explanation of its origin? Culin believes he has found a plausible one by identifying the hoop with the netted shield or "water-shield" of the Twin Gods of War. "The explanation of the origin and significance of the game of hoop and pole rests largely upon the identification of the hoop. The netted gaming hoop is readily seen to be the same as the netted shield, one of the attributes of the twin War Gods . . . of Zuñi mythology."[2] Culin here interprets the genesis of an objective cultural phenomenon —the hoop and pole game—by the accessory and specific psychological association—the hoop of the game with the shield of the god—which this phenomenon has found in one particular area. The choice of the association of one particular area from the great number of actual associations found in other areas is in itself arbitrary. But even if the area of the particular association in question were co-extensive with the total area of occurrence of the game, it would be unmethodological to use this association as an explanation of the origin of the objective phenomenon of the game as we have no criteria to prove the primary nature of this association. An association of this kind admits of no historical interpretation, but implies a psychological problem, which, it would seem to my mind, is of the greatest importance.

Within the wide area, in which the hoop and pole game occurs, we find comparatively small cultural units, which are characterized by a definite and singular complex of concepts associated with the game. The fact that the hoop and pole game is subject to different psychological assimilations in different cultural units cannot be understood "kulturhistorisch," as Graebner conceives this term, but only from the standpoint of the psychology of cultural setting. In the following I shall attempt to show that in the Plains and among the Hopi the hoop and pole or dart are found associated with two entirely distinct complexes of ideas.

[1] 5, p. 420–527.

[2] 5, p. 422–3.

The buffalo hunt, the characterizing feature of the culture of the Plains, predetermines, so to say, the associations of the hoop and pole or ring and javelin game. Speaking of the Arikara, Skidi, and Wichita, Dorsey says it is part of the ceremonial calling of the buffalo.[1] The Cheyenne call the game the "buffalo-game."[2] The Skidi and Arikara say that the sticks of the game were originally buffalo bulls, while the ring was a buffalo cow.[3] A very common and characteristic myth motive of the Plains tells of a poor, but wonderful boy who saves his people from starvation by a hoop-and-dart game magic. He shoots an arrow at the rolling wheel and at once the wheel changes into a buffalo and the arrow kills it. This he can repeat at will.[4]

In Tusayan, on the other hand, the hoop and pole game is ceremonially associated with the idea of the fertilization of the fields. This is brought out clearly in the public dances of the women's ceremonies of Walpi and Oraibi. Of these we have good information on the Oraibi and Walpi Mamzrauti, the Oraibi and Walpi Owakulti, and the Walpi Lalakonti. The public dance on the last day of all these ceremonies offers but slight variations of a general type. Since these variations, however, bring out the points under consideration with especial clearness, a brief description of them all may be of interest.

In the public dance of the Walpi Owakulti the women of the society form a ring on the plaza, facing each other. They hold basket trays with the concave side towards the center.

Two girls, dressed to personate the Owakulti maids, enter the plaza after the others have begun their songs. On the ground before them they roll netted hoops at which they throw objects made of corncobs with attached feathers. These girls also carry bundles of basket trays which they cast among the spectators who struggle for their possession.[5]

The feathered darts are those commonly used in this game. Before being used in this public performance, the two hoops hang over the idol of the Owakulti maid of the kiva altar.[6]

[1] 16, p. 7.
[2] 62, p. 163 and 170.
[3] 14, p. 344; 16, p. 94.
[4] 14, p. 85; 62, p. 170–1; 54, p. 148–9; 13. p. 370–1.
[5] 50, p. 223.
[6] 50, p. 218.

In the Oraibi Oaqöl ceremony[1] the two Oaqöl-manas are dressed in the kiva. The other female participants file out of the kiva and form a dance circle on the plaza. The chief priestess and three other women each carry a netted gourd vessel, all the others have trays like those used at Walpi. In the kiva the two manas in the meantime take the wheels and feathered darts from the altar, begin their game by rolling the wheels over the floor of the kiva and shoot the darts at them. This performance they repeat after having ascended to the plaza. The chief priest has by this time placed a bundle of trays in the center of the dance circle. The women of the circle begin to sing and dance. The trays are held with the concave side towards the center of the circle. The two Oaqöl-manas roll their wheels, shoot at them, pick up the implements, and repeat the performance. This they continue around the circle until they finally enter it. Here they open the said bundle and throw the trays in different directions outside of the circle. The men scramble for their possession.

In the Walpi Mamzrauti the women form on the plaza a semicircle open towards the east. In this case they hold, instead of trays, slab pahos with characteristic designs of rain clouds and of conventionalized corn ears.[2] Two maids are dressed to represent male personages and are equipped with bow and arrow. They begin their performance in the kiva by throwing a bundle of cornhusk and then shooting their arrows at it.[3] This they continue on the plaza. When they have reached the circle of dancers, they throw their bundle into it and shoot their arrows at it once more. Finally, they throw little nodules of sweet cornmeal and water from the circle to the spectators outside who scramble for their possession.[4] The act of shooting is said "to typify lightning striking in the corn-field, an event which is regarded as the acme of fertilization."[5]

In the Oraibi Marau ceremony the maids are again dressed as

[1] 92, p. 41–43.
[2] 24, p. 240.
[3] 23, p. 91.
[4] 24, p. 238–9.
[5] 24, p. 238–9.

men, representing two archers and two lancers. The archers are equipped with bow and arrows and have a bundle consisting of squash, melon, bean, and other vines.[1] Each lancer on the other hand has a long stick or lance and a simple ring without netting.[2] The women of the dance circle are supplied with cornstalks. The two archers are the first to emerge from the kiva. They advance while shooting their arrows at the bundle of vines. In this way they make their way around the circle and finally enter it. They are followed by the two lancers, who throw their long sticks repeatedly at the rings. When the lancers arrive at the dance circle, they throw their sticks and wheels over the dancers into the circle. At the close of the dance the archers and lancers throw balls made of sweet-corn meal and water from the inside of the circle to the spectators who scramble for them. After the departure of the dancers the cornstalks left by them on the plaza are also eagerly gathered up by the spectators.[3]

In the Walpi Lalakonti, finally, the women dancers again form a horseshoe-shaped figure in the plaza and sing.[4] Each dancer carries a flat basket. Two women dressed exactly alike are led forth from the kiva by a priest. With sacred meal he draws on the ground two parallel lines crossed by a third one. This figure Fewkes refers to at another place as a rain-cloud symbol.[5] The two women throw ears of corn with attached feathers into this figure. Repeating the drawing of the figure and the throwing of the corn the priest and the two women advance toward the ring of dancers. The last figure is drawn inside of the circle. The final act consists in throwing trays to the spectators.

The Hopi women's dances, of which but small parts have been very briefly indicated by me, show an identical setting and offer good objects for interpretation by way of comparison. The public performances in the various villages show identity of pattern, while the minute variations are significant for an understanding of

[1] 5, p. 426.
[2] 87, plate 22.
[3] 87, p. 65–7.
[4] 22, p. 128.
[5] 26, p. 118.

the psychological setting. Thus we find that the women of the dance circle use in strictly analogous phases of the rites basket trays, cornstalks, and slab-pahos with rain symbols interchangeably. Balls of cornmeal take the place of trays as cherished gifts of the maids to the spectators. Again the maids shoot either at a bundle of cornhusks, at gaming wheels, or at a bundle of squash, melon, and bean vines. The variation in which they throw ears of corn on rain cloud symbols is not less significant. The meaning of these rites is absolutely unmistakable and is accentuated by contrast when the ideas associated with the hoop and dart in the Plains are compared with those borne out in these women's dances of the Hopi.

The characteristic individuality of the Pueblo culture has always been tacitly recognized and has been ascribed in a vague way to environmental factors. This tacit recognition is, however, I think, of no scientific value. The phenomena involved are in reality open to scientific analysis, by which alone we can gain a comprehension of the psychological setting in question. In the foregoing considerations I have attempted an analysis of this kind by delineating definite phases of the culture of the Pueblo which show the characterizing psychological trend of this culture and the individuality of its setting. This individuality has been indicated heuristically by a catch-word,—"the idea of fertilization."

My considerations have been restricted to a limited number of phenomena which seemed to me to bring out the problems in point especially strikingly. Anyone who is familiar with the culture of the Pueblo Indians will, however, recognize at once that the same points which I have discussed might be further illustrated by numerous other examples and might be extended to other phases of Pueblo life. To state but one instance, the whole question of making and sacrificing prayer sticks,—a problem which in itself when studied in detail would suffice to justify the use of the term "idea of fertilization,"—has been neglected by me altogether.

The scope of our considerations may be summarized very briefly as follows: The idea of Sky-father and of his complement, Earth-mother, which, when considered independently, is by no

means restricted to the Pueblo, gains its characteristic connotations through the associations into which it enters in this culture. Important associations of this kind appear in the myths of the Snake society of the Hopi. The same idea is also associated with that of parturition and of the emergence of the people through the *sipapu*. A further link in the chain of associations is the idea of the *sipapu* as a *lagune* and of springs as the natural passages of communication with the gods of the underworld and of fertility. The water serpent is the deity of the fertilizing water of these springs, as well as God of the Underworld, the place of germination. The deceased return to the underworld whence they work for rain and fertility in the behalf of the living. This belief is an important psychological factor in the Katcina cult, without explaining its origin historically. The Twin War Gods offer a similar example of secondary psychological associations. These gods and their societies are associated with war, on the one hand, and with the idea of fertilization, on the other. Their weapons are simultaneously weapons of war and symbols of fertilization. The unequivocal meaning of the hoop or annulet, whether it be associated with the Twin War Gods or not, is always that of fertilization of the fields. Finally, the dart and wheel game, which is the game par excellence of the war-gods, is employed in the women's dances of the Hopi as magic of fertilization. The agricultural significance of this ceremonial use of the game among the Pueblo is especially striking when compared with the objectively identical, but psychologically heterogeneous, "buffalo game" of the Plains.

This summary indicates the common trend or setting of the Pueblo culture. That this setting is not comprehensible as a summation of diffused elements is proven by the reinterpretation of heterogeneous traits according to a uniform scheme of interrelated ideas. The problem of the cultural setting of the Pueblo is therefore a psychological one.

The above investigations could be further elaborated by a thorough comparison of the psychological setting of the Pueblo culture with that of other culture areas with reference to the various cultural phenomena under consideration. The intensive

analysis would thus be supplemented by an extensive comparison. While this has not been altogether neglected, no attempt at completeness in this respect has been made. The comparative points in question have in most cases been rather left to suggest themselves by way of implication.

Besides these limitations my considerations are incomplete in two other respects.

Firstly: While the Pueblo culture itself offers unusually favorable opportunities for studying the problems of cultural setting, the great mass of the ethnographical material from this area, especially that from Zuñi, has been collected in an unsatisfactory way on account of the one-sided point of view taken. Furthermore, the published material from the Rio Grande Pueblos is very meager. Our knowledge of the Pueblo culture *in toto* lacks uniformity and the objective and critical valuation of the material found in the literature is frequently quite impossible. These conditions have of course affected our own discussions.

Secondly: In a very brief presentation of the analysis of complex cultural phenomena the danger is constantly present of laying greater stress on specific phases of a culture than the world of reality in its vast complexity and diversity of interrelations may warrant. I do not pretend to have avoided this mistake in all cases. I am certain, however, that this shortcoming is but of relative importance and can be readjusted more or less accurately by future investigations.

In spite of the incompleteness of the paper, I believe that the essential point appears with absolute clearness,—namely that the cultural setting of the Pueblo is not equal to the sum of imaginary "Kulturschichten," but involves real and objective psychological problems. As soon as these problems are apprehended, our vision can no longer be obscured by Graebner's pseudo-historical method of statistical inventory and alleged reconstruction.

References

1 Bandelier: Final Report of Investigations among the Indians of the Southwestern United States, Part 1. Papers of the Archaeological Institute of America, American Series 3.

2. Bandelier: Final Report of Investigations among the Indians of the Southwestern United States, Part 2. Papers of the Archaeological Institute of America, American Series 4.
3. Bandelier: An Outline of the Documentary History of the Zuñi Tribe; Journal of American Ethnology and Archaeology, Vol. 3.
4. Bourke: Notes on the Cosmogony and Theogony of the Mohave Indians of the Rio Grande; Journal of American Folk-Lore, Vol. 2.
5. Culin: Games of the North American Indians; 24th Annual Report of the Bureau of American Ethnology.
6. Cushing: The Zuñi Social, Mythic, and Religious Systems; Popular Science Monthly, Vol. 21.
7. Cushing: Outlines of Zuñi Creation Myths; 13th Ann. Rep. Bur. Am. Ethn.
8. Cushing: Zuñi Breadstuff, The Millstone, Vol. 9.
9. Cushing: A Zuñi Folk-tale of the Underworld; Journ. Am. Folk-Lore, Vol. 5.
10. Cushing: Katalog einer Sammlung von Idolen, Fetischen und priesterlichen Ausruestungsgegenständen der Zuni- oder Ashiwi-Indianer von Neu Mexiko; Veroeffentlichungen aus d. Kgl. Museum f. Völkerkunde (Berlin), Band 4.
11. Cushing: Zuñi Folk Tales, New York 1901.
12. Dorsey and Voth: The Mishongnovi Ceremonies of the Snake and Antelope Fraternities; Field Col. Mus. Anthrop. Series, Vol. 3.
13. Dorsey and Kroeber: Arapaho Traditions; Field Col. Mus. Anthrop. Series, Vol. 5.
14. Dorsey: Traditions of the Skidi Pawnee; Memoirs of the American Folk-Lore Society, 1904.
15. Dorsey: Mythology of the Wichita; Carnegie Institution of Washington.
16. Dorsey: Traditions of the Arikara; Carnegie Institution of Washington.
17. Dorsey: The Pawnee, Mythology (Part 1), Carnegie Institution of Washington.
18. Dubois: Mythology of the Mission Indians; Journ. Am. Folk-Lore, Vol. 17.
19. Dubois: Religion of the Luiseño and Diegueño Indians of Southern California; Univ. Cal. Publ. in Am. Arch. and Ethn., Vol. 8.
20. Dunbar: The Pawnee Indians; Magazine of American History, Volume 8.
21. Ehrenreich: Ein Ausflug nach Tusayan; Globus, 76.
22. Fewkes: The La-la-kon-ta; American Anthropologist, O. S., 5.
23. Fewkes: Hopi Basket Dances; Journal Am. Folk-Lore, Vol. 12.
24. Fewkes: Mamzrauti; American Anthropologist, O. S., 5.
25. Fewkes: The Pueblo Settlements near El Paso, Texas; Am. Anthrop., N. S., 4.
26. Fewkes: Hopi Katcinas; 21st Ann. Rep. Bur. Ethn.
27. Fewkes: Hopi Shrines near the East Mesa; Am. Anthrop., N. S., 8.
28. Fewkes: A Theatrical Performance at Walpi; Proceedings of the Washington Academy of Sciences, Vol. 2, 1900.
29. Fewkes: The Pa-lü-lü-koñ-ti; Journ. Am. Folk-Lore, Vol. 6.

30. Fewkes: A few Tusayan Pictographs; Am. Anthrop. O. S., 5.
31. Fewkes: Morphology of Tusayan Altars; Am. Anthrop., Old Series, 10.
32. Fewkes: Prehistoric Culture of Tusayan; Am. Anthrop., O. S., 9.
33. Fewkes: The Lesser New Fire Ceremony at Walpi; Am. Anthrop., N. S., 3.
34. Fewkes: On Certain Personages who Appear in a Tusayan Ceremony; Am. Anthrop., O. S., 8.
35. Fewkes: The New-fire Ceremony at Walpi; Am. Anthrop., N. S., 2.
36. Fewkes: The Alosaka Cult of the Hopi Indians; Am. Anthrop., N. S., 1.
37. Fewkes: The Snake Ceremony at Walpi; Journ. of Am. Ethn. and Archaeol., Vol. 4.
38. Fewkes: A Few Summer Ceremonials at the Tusayan Pueblos; Journ. of Am. Ethn. and Archaeol., Vol. 2.
39. Fewkes: Wüwütcimti: The Tusayan New Fire Ceremony; Proc. Bost. Soc. Nat. History, Vol. 26.
40. Fewkes: An Interpretation of Katcina Worship; Journ. Am. Folk-Lore, Vol. 14.
41. Fewkes: A Study of Summer Ceremonials at Zuñi and Moqui Pueblos; Bulletin of the Essex Institute, Vol. 22.
42. Fewkes: A Few Summer Ceremonials at Zuñi Pueblo; Journ. of Am. Ethn. and Archaeol., Vol. 1.
43. Fewkes: Minor Hopi Festivals; Am. Anthrop., N. S., 4.
44. Fewkes: Tusayan Flute and Snake Ceremonies; 19th Ann. Rep. Bur. Ethn.
45. Fewkes: Tusayan Totemic Signatures; Am. Anthrop., O. S., 10.
46. Fewkes: The Destruction of the Tusayan Monsters; Journ. Am. Folk-Lore, Vol. 8.
47. Fewkes: Tusayan Migration Traditions; 19th Ann. Rep. Bur. Ethn.
48. Fewkes: The Kinship of the Tusayan Villagers; Am. Anthrop., O. S. 8.
49. Fewkes: Sky-God Personations in Hopi Worship; Journ. Am. Folk-Lore, Vol. 15.
50. Fewkes: The Owakülti Altar at Sichomovi Pueblo; Am. Anthr., N. S., Vol. 3.
51. Fewkes: Growth of the Hopi Ritual; Journ. Am. Folk-Lore, Vol. 11.
52. Fewkes: The Ceremonial Circuit among the Village Indians of Northeastern Arizona; Journ. Am. Folk-Lore, Vol. 5.
53. Fewkes: The Walpi Flute Observance; Journ. Am. Folk-Lore, Vol. 7.
54. Fletcher: The Omaha; 27th Ann. Rep. Bur. Ethn.
55. Fletcher: Star Cult among the Pawnee; Am. Anthr., N. S., 4.
56. Franciscan Fathers: Ethnological Dictionary of the Navaho Language.
57. Gatschet: Water-Monsters of American Aborigines; Journ. Am. Folk-Lore, Vol. 12.
58. Goddard: Jicarilla Apache Texts; Anthrop. Pap. Am. Mus. Nat. Hist., Vol. 8.
59. Goddard: Gotal—A Mescalero Apache Ceremony; Putnam Anniversary Volume.
60. Hodge: A Zuni Foot-race; Am. Anthr., O. S., 3.
61. Hodge: The Verification of a Tradition; Am. Anthr. O. S., 10.
62. Kroeber: Cheyenne Tales; Journ. Am. Folk-Lore, Vol. 13.

63. Kroeber: The Mission Indians; Journ. Am. Folk-Lore, Vol. 19.
64. Lévy-Bruhl: Les fonctions mentales dans les sociétés inférieures.
65. Lowie: The Northern Shoshone; Anthrop. Pap. Am. Mus. Nat. Hist., Vol. 2.
66. Lowie: The Test-Theme in North American Mythology; Journ. Am. Folk-Lore, Vol. 21.
67. Lumholtz: Unknown Mexico.
68. Lumholtz: Symbolism of the Huichol Indians; Memoirs of the Am. Mus. Nat. Hist., Vol. 3.
69. Lummis: The Man who married the Moon and other Pueblo Indian Folk-stories. New York, 1894.
70. Matthews: Navaho Legends; Memoirs of the American Folk-Lore Socity, 1897.
71. Matthews: Night Chant; Memoirs Am. Mus. Nat. Hist., Vol. 6.
72. Matthews: Gentile System of the Navaho Indians; Journ. Am. Folk-Lore, Vol. 3.
73. Matthews: Myths of Gestation and Parturition; Am, Anthrop., 1902.
74. M. L. Miller: A Preliminary Study of the Pueblo of Taos, New Mexico; Chicago, 1898.
75. Mindeleff: A Study of Pueblo Architecture; 8th Ann. Rep. Bur. Ethn.
76. Mooney: Jicarilla Genesis; Am. Anthr., O. S., 11.
77. Preuss: Nayarit Expedition, Vol. 1, Leipzig, 1912.
78. Russell: The Pima Indians; 26th Ann. Rep. Bur. Ethn.
79. Russell: Myths of the Jicarilla Apache; Journ. Am. Folk-Lore, Vol. 11.
80. Seler: Natürliche Grundlagen mexikanischer Mythen; Zeitschrift für Ethnologie, Band 39.
81. Stevenson: Navaho Ceremonial of Hasjelti Dailjis; 8th Ann. Rep. Bur. Ethn.
82. Stevenson: The Sia; 11th Ann. Rep. Bur. Ethn.
83. Stevenson: The Religious Life of the Zuñi Child; 5th Ann. Rep. Bur. Ethn.
84. Stevenson: Zuñi Ancestral Gods and Masks: Am. Anthr., O. S., 11.
85. Stevenson: The Zuñi; 23rd Ann. Rep. Bur. Ethn.
86. Stevenson: Zuñi Games; Am. Anthrop., N. S., 5.
87. Voth: The Oraibi Marau Ceremony; Field Col. Mus. Anthr. Series, Vol. 11.
88. Voth: The Oraibi Powamu Ceremony; Field Col. Mus. Anthrop. Series, Vol. 3.
89. Voth: The Traditions of the Hopi; Field Col. Mus. Anthrop. Series, 8.
90. Voth: The Oraibi Summer Snake Ceremony; Field Col. Mus. Anthrop. Series, Vol. 3.
91. Voth: Oraibi Soyal Ceremony; Field Col. Mus. Anthr. Series, 3.
92. Voth: The Oraibi Oáqöl Ceremony; Field Col. Mus. Anthr. Series, Vol. 6.
93. Voth: Brief Miscellaneous Hopi Papers; Field Col. Mus. Anthrop. Series, Vol. 11.
94. Waterman: The Religious Practices of the Diegueño Indians; Univ. Calif. Publ. in Am. Archaeol. and Ethn., Vol. 8.
95. Wissler and Duvall: Blackfoot Mythology; Anthr. Pap. Am. Mus. Nat. Hist., Vol. 2.
96. Fewkes: Tusayan Katcinas; 15th Ann. Rep. Bur. Ethn.

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FIG. 1.—Map showing localities inhabited by the Quichua measured.

THE INDIANS OF CUZCO AND THE APURIMAC

Introduction[1]

IN an address before the Anthropological Society of Washington on "The Results of the Speaker's Recent Trip to Peru," Dr. Aleš Hrdlička (9) enumerates the following as the most important problems awaiting solution: (1) the derivation of the Peruvians; (2) the time of their advent into the country; (3) the extension and exact physical characteristics of the Aymara and Quichua; and (4) the genetic relations of the Peruvian to the Argentine and Chilean aborigines.

The Peruvian Expedition of 1912 under the auspices of Yale University and The National Geographic Society, with Professor Hiram Bingham as its leader, afforded an opportunity for the acquisition of data for the study of the anthropometric and physiognomic characters of the Quichua. The following chart was prepared for recording the observations. The asterisks indicate the measurements considered the most important.

The Peruvian Expedition of 1912

Under the auspices of Yale University and The National Geographic Society.

Chart for Anthropological Measurements for Field Use, prepared by H. B. Ferris, Anatomical Laboratory, Yale Medical School.

Name			Stout	LIPS
Tribe			Medium	Thick
Locality			Thin	Medium
Age	Sex	Date		Thin
HAIR		EYES		Everted
Color		Color		
Straight		Epicanthus		
Curly		Palpebral Fissure		
Woolly		Plica Semilunaris		
Abundant		EARS		
Bald		*Length		

[1] The expense involved in the publication of this Memoir has been assumed by the National Geographic Society.

Grey
NOSE
*Height
*Breadth
Dorsum; Straight
" Concave
" Convex
" Sinuous
Length of Base
Nostrils
TEETH
Number
Third Molars
Caries
Incisors; Vertical
" Projecting
" Spatulate
DEFORMATIONS
Cranium
Nose
Lips
Ears
Teeth
Body
Breast
Genitals
BODY
*Height, total
* " to Chin
* " " Presternal Notch
* " " Acromion
* " Sitting
* " Kneeling
* " to Knee
* " " Int. Malleolus
" " Umbilicus
*Biacromial Breadth
*Bitrochanteric Breadth
*Span of Arms
*Length of Arm
* " " Forearm
* " " Hand
* " " Foot
Supramalleolar Circumference
Smallest Largest
*Breadth
Anomalies of Helix
" " Antihelix
" " Lobule
Darwin's Tubercle
Auriculo-Temporal Angle
SKIN
Color
Oily
Odor
Pilosity
Tattoo Marks
Naevi
Freckles
MALAR BONES
Broad
Projecting Forward
HEAD
*Length
*Breadth
*Height
Circumference
*Binauricular Breadth
Forehead "
FACE
*Bizygomatic Breadth
Bigonial "
Interocular "
Ext. Biorbital "
Biorbito-Nasal Arc
*Nasion to Prosthion
* " " Chin
Vertex " "
*Interauricular Nasal Line
* " Prosthionic Line
Auriculo-Nasal "
" -Prosthionic "
Polythely
Albinism
Steatopygia
Finger Impressions
No. Children in Family
Strength
Expression of Emotions

This study, we hope, will accomplish a little directly toward the solution of a part of the third problem, *viz.*, the physical characters of the Quichua, and incidentally furnish data which, when largely supplemented and extended, may aid in the solution of the problem of the derivation and genetic relations of the Peruvians.

As it was impossible in the time at our disposal to obtain Martin's anthropometric set of instruments, a Bertillon set was substituted. This set contained a long and short folding rod for height measurements, a craniometer, a sixty-centimeter sliding compass for the larger measurements, and a one-hundred-millimeter one for the smaller measurements, as those of the ear and nose, a steel tape, grip dynamometer (Tiemann and Company), and ink, roller, and pad for taking finger impressions.

The following report was submitted by Dr. Luther T. Nelson, who was the surgeon for the Expedition, and made and recorded the various measurements and observations and also took the photographs.

"Our anthropological measurements were taken in Cuzco, Huadquiña, Machu Picchu, and Santa Ana.

"In order to persuade any Indians in Cuzco to be measured, it was necessary for a soldier to go out on the streets to catch them and force them to come in to the Hotel Central. Many of the Indians thought that they were being recruited for service in the army, and not a few shed tears at the thought. Others were only curious and much relieved when they were set free and given a five-cent piece with which to buy chicha (native beer made from maize).

"Thirty-eight measurements were taken of each subject—measurements of head, face, ears, and nose, as well as of height when standing, kneeling, and sitting. Many other data were also recorded concerning any peculiarities or deformations, color of eyes and hair, and other facts of anthropological interest. One hundred and forty-five Indians were thus studied and a front and a side-view photograph taken of each. All of these, with one exception, were males. Photographs of many Indian women

were also taken in Cuzco and at the stations between Cuzco and Mollendo, making in all four hundred and thirty-three photographs taken for this study. Only a remarkably few cranial deformations were found, these being all slightly acrocephalic. The one hundred and forty-five Indians measured represent sixteen provinces and sixty-three localities, as shown by the following table:—

Department	Province	Locality		
Cuzco	Acomayo	Pomacanchi	2	8
		Acomayo	3	
		Acos	3	
	Anta	Anta	12	31
		Huarocondo	9	
		Zurite	2	
		Huaypo	2	
		Apcorquilla	1	
		Mollepata	2	
		Chinchaypuquio	1	
		Limatambo	1	
		Iscuchaca	1	
	Calca	Calca	4	13
		Chincheros	3	
		Pisac	2	
		Taray	2	
		Coya	1	
		Lamay	1	
	Canchis	Sicuani	2	6
		Querumarca	1	
		San Pablo de Cacha	1	
		Tungasuca	1	
		Checcacupe	1	
	Canas	Yanaoca	2	2
	Cuzco	Chitapampa	1	7
		Cuzco	5	
		San Sebastian	1	
	Convencion	Media Luna	1	16
		Huadquiña	5	
		Santa Rosa	1	
		Arma	1	
		Santa Ana	7	
		Vilcabamba	1	
	Chumbivilcas	Santo Tomas	2	2

	Paucartambo	Paucartambo	4	
		Churo	1	
		Mashuay	1	7
		Ccatcca	1	
	Paruro	Cusibamba	1	
		Paruro	1	2
	Quispicanchi	Oropeza	3	
		Ocongate	1	
		Saylla	1	
		Quispicanchi	2	10
		Palca	1	
		Lauramarca	1	
		Quiquijana	1	
	Urubamba	Chillca	1	
		Ollantaytambo	7	
		Maras	6	
		Machu Picchu	1	20
		Yucay	2	
		Urubamba	3	
Apurimac	Antabamba	Sabayno	3	3
	Abancay	Pachachaca	1	
		———	1	3
		Abancay	1	
	Andahuaylas	Talavera	1	
		Andahuaylas	1	3
		Huancarama	1	
	Cotabambas	Curpahuasi	3	
		Coyllurqui	4	12
		Cotabambas	5	
Total	16	63	145	

"Two interesting facts were noticed about the Indians:—

"1. The leg and back muscles were markedly developed, while their arm muscles showed very meager development. This is due probably to the fact that their work consists largely of carrying heavy loads upon their backs over mountain trails.

"2. They do not become bald and their hair seldom loses its pigment. Their teeth are also remarkably well preserved except on the sugar plantations, where they suck the sugar cane and consume more sugar and chancaca (a crude brown sugar in cakes)."

These provinces lie principally between the parallels of 13°

and 15° S. latitude and between 71° and 74° W. longitude. The accompanying map, drawn by Mr. A. H. Bumstead, the topographer of the Expedition, shows the provinces and localities cited in Dr. Nelson's report. The altitude of the regions inhabited by the Quichua who were measured varied from 3,500 to 13,500 feet, the average altitude being about 11,000 feet.

Previous Studies of the Quichua

The importance of an early study of so-called pure races is admitted by anthropologists, as it is simply a question of a comparatively short time when there will be no race that has not suffered recent admixture. The pure Peruvian Indians are rapidly disappearing, and it is important to make a record of their physiognomic characters and body proportions in the hope that these data may ultimately aid in solving the important problem of their racial genesis and affinities. Unfortunately, in the past, anthropologists have focused their efforts, perhaps from necessity, too greatly on osteological material, neglecting the physiognomic characters and proportions of the living. In fact, I have been able to find but two authors, namely d'Orbigny (4) and Chervin (2), who publish measurements of living Quichua. David Forbes (7), however, in 1870 published an article on the Aymara Indians, including numerous measurements of the living and compared the physiognomy as well as the body proportions of the Aymara with the Quichua. Yet, so far as the Quichua is concerned, his comparisons are based for the most part on appearance rather than actual measurements. D'Orbigny's measurements were largely of stature, but Chervin includes twenty measurements carried out on one hundred and four male and seven female Aymara, sixty-seven male and eight female Quichua, ten males mixed Quichua and white, and eleven male and one female mixed Quichua and Aymara. The anthropometric part of his work deals principally with the comparison of the Aymara and the Quichua in respect to measurements and the indices derived therefrom, as well as with body proportions. D'Orbigny claims that the Aymara and Quichua are of the same stock. Deniker (3) says that physically they are

very much alike. Chervin finds that a larger percent of Aymara than of Quichua are hyper- and ultrabrachycephalic and that the bizygomatic diameter is greater in the Aymara and the auriculo-bregmatic height is greater in the Quichua.

It is to be regretted that there has been no agreement in the past among anthropologists as to the measurements that should be made in the living and the exact method of making them. The consequent lack of uniformity as to measurements, technique, and the method of estimating the indices many times renders it difficult or impossible to make comparisons.

Some writers divide the Peruvians into four groups: (1) The Chincha, of the coast, (2) The Quichua, (3) The Huanca, and (4) The Aymara, the last three living in the interior. D'Orbigny (4) states that the Quichua occupy the regions from the Andasmayo river above Quito to the Rio Maure in Chile, except in the transverse area from Lake Titicaca to the coast. The Indians measured by Chervin occupied an area between the meridians 67° and 71° and parallels 22° and 15° South.

General Considerations

The Yale-National Geographic Society Peruvian Expedition made eighteen measurements of the body and extremities, six of the head, and twelve of the face, as well as observations on the eyes, teeth, skin and its appendages, deformations and anomalies. These measurements and derived indices are recorded in the accompanying tables.

In this study the average, the maximum, and the minimum are arranged in three groups for better comparison, *viz.*, (1) the entire group, (2) the pure blood, and (3) the mixed (white). The white mixture was probably entirely Spanish, but it is possible that it may have been other than Spanish. On account of this uncertainty it was deemed best to use the general term, mixed (white). Of the one hundred forty-five cases measured, twenty-four were mixed (white) and one hundred twenty-four were judged pure Quichua. There was no evidence of negro or Mongolian admixture. The criteria of racial purity were skin, color, and features and it was possible for errors to occur.

The provenance of the Quichua was as follows:—

Urubamba	mixed 9, pure 11,	Acomayo	mixed 1, pure 7,
Convencion	mixed 6, pure 10,	Andahuaylas	mixed 1, pure 2,
Cuzco	mixed 3, pure 4,	Anta	mixed 2, pure 29,
Paruro	mixed 1, pure 1,	Abancay	mixed 1, pure 2.

In the following provinces all the cases were pure: Antabamba 3, Calca 13, Canchis 6, Canas 2, Cotabambas 12, Chumbivilcas 2, Paucartambo 7, Quispicanchi 10. The white admixture seems to be most frequent in the provinces of Convencion, Urubamba, and Cuzco, since eighteen of the forty-three cases examined were mixed (white). Although Calca adjoins Urubamba and Convencion on the east, the thirteen cases examined there show no instances of mixed blood. According to Squier (13), seven-eighths of the population of Cuzco are pure Indian.

The ages of the Indians measured ranged from seventeen to eighty-eight years. The accompanying table indicates the number in each decade.

17–20 years,	14, or	9.6	percent.
21–30 "	46, "	31.7	"
31–40 "	41, "	28.3	"
41–50 "	30, "	20.7	"
51–60 "	7, "	4.8	"
61–70 "	4, "	2.8	"
71–80 "	2, "	1.4	"
81–90 "	1, "	0.7	"

All but 9.6 percent had reached an age where growth had practically ceased: 85.5 percent were adults, twenty-one to sixty years old. It is not possible from the data obtained to draw any conclusions as to the degree of longevity attained by these Peruvian Indians. Undoubtedly the ages given in many cases are only approximate.

Of the one hundred and twenty-nine instances where the character of the *panniculus adiposus* was noted, four only, or 3.1 per-

cent, were reported as fat; ninety-six, or 74.4 percent, as medium; and twenty-nine, or 22.5 percent as thin. Only two of the four noted above as fat were of pure blood and one of these was a female; the other two were mixed Spanish.

In speaking of the Aymara, Forbes (7) says that the half-caste often becomes very corpulent, but that this is never the case with the pure Indian. It is difficult to tell whether this lack of corpulency is partly a racial character or is due entirely to habits and environment.

The grip strength of the Quichua was obtained by a dynamometer (Tiemann and Co.) and only in the right hand, and varied from 40 to 130 with an average of 72 in the ninety-seven cases tested. The average reading of twenty white adults, all of sedentary occupation, was one hundred and two.

If we can be certain that the above result is truly representative of the grip strength of the Quichua, it is surprisingly small. This lack of grip agrees with Dr. Nelson's observation that the forearm muscles were poorly developed. The Novara Expedition records the grip strength of a number of races but inasmuch as a Regnier dynamometer was used it is not possible to compare the results with those obtained for the Quichua.

The number of children in a family varied up to nine, the average being 2.8. Of the families having one or more children, the average is 3.8. Twenty-seven percent of the marriages were childless. This census, however, is quite imperfect and can be considered only approximate. Chervin states that the Aymara have one hundred and seventy-three boys to one hundred girls and the Quichua sixty-seven boys to one hundred girls. Forbes says that the Aymara family rarely consists of more than four children.

Pathology

No congenital malformations were observed. The following accidental deformities were recorded. The hallux was found greatly abducted in one case and greatly adducted in another. No explanation of this was given. The following further pathological conditions were observed: an old dislocation of the left

shoulder interfering with free motion, especially abduction; a ventral hernia of the left upper quadrant; two cases showing scars from burns; an old Colles' fracture, with marked deformity; traumatic cataract; cystic thyroid producing no symptoms; pterygium of both eyes encroaching on the cornea; small lipoma on forehead; and another case of multiple lipomata on neck with numerous scars on shoulder and back. These scars were due to the removal of the tumors by means of herbs. Some were tied off with horse hairs, according to the statement of the patient. One or more naevi were present in 18.6 percent of the cases. Five cases of overo were recorded, some showing patches on arms and legs, others on body, face, and neck. The skin in these cases has somewhat the feeling of scleroderma and is sufficiently sclerosed on shoulders and arms to limit motion. Overo is apparently the same disease as pinto (mal de los pintos) or spotted sickness. This is a parasitic contagious disease of the skin, resembling psoriasis and occurring in Mexico, Peru, and other tropical countries. Of the one hundred forty-five Quichua examined, 3.4 percent were infected with this disease. These cases came from various localities. The *arcus senilis* was found in two cases, one sixty and the other eighty years of age.

EYES

The following grouping is obtained by classifying the eye color according to Bertillon's system:—

	Pure, Percent.	Mixed, Percent.
Areola: radiating, maroon, medium Periphery: yellow-greenish, medium	.8	——
Areola: radiating, maroon, very deep Periphery: id.	.7	——
Areola: radiating, chestnut, medium Periphery: yellow-greenish, light...	——	4.2
Areola: radiating, maroon, medium Periphery: yellow-greenish, medium	61.1	16.6
Areola: radiating, maroon, deep Periphery: maroon, medium	.7	——
Areola: radiating, maroon, deep Periphery: slaty-green, very deep	.7	——
Areola: radiating, maroon, light Periphery: chestnut, light	33.9	79.2

Areola: maroon, deep Periphery: maroon, deep	.7	——
Areola: radiating, maroon, light Periphery: yellow-greenish, medium	.7	——
Areola: radiating, chestnut, medium Periphery: yellow-greenish, light	.7	——

It is to be observed that in the mixed the areola and periphery are lighter than in the pure. The predominating color for the areola in the pure is medium maroon, and for the periphery greenish-yellow. In the mixed the predominating color for the areola is light maroon and for the periphery light chestnut.

Teeth

The teeth were inspected as to the total number, the number of third molars, the extent of caries, anomalies, and deformations. If we consider the matter according to age periods, we have the following result. From seventeen to twenty years there were fourteen cases, eleven of which possessed no third molars, one had four third molars and two others, two each. Four of the cases showed one or more carious teeth. There were forty-six cases from twenty-one to thirty years of age, of which eighteen had all the third molars and nineteen, one to three. Nineteen cases showed caries in one or more teeth. From thirty-one to forty years there were forty-one cases. Of these twenty-four possessed all the third molars, and twelve one to three third molars. Twenty-three had one or more carious teeth. Of the thirty cases from forty-one to fifty years, there were fourteen which had all the third molars present, ten which showed one to three third molars missing, and six with all the third molars missing. Twenty-one had one or more carious teeth. Between the ages of fifty-one and sixty, there were seven cases. None of these had all the third molars present, four had one or two and three had none. Six had one or more carious teeth. From sixty-one to seventy years, there were four cases. All of these had all of the third molars present and three had one or more carious teeth. From seventy-one to eighty, there were two cases, one having all the third molars and the other all but one. Between eighty-one and ninety there was one man, eighty-eight

years of age, who had all the third molars present and still possessed thirty-one teeth, which were, however, very much worn, but not carious.

The only irregularity of arrangement of the teeth was in a man forty years old. His upper right lateral incisor showed a lingual displacement. The incisors in all cases were approximately vertical, and in none were they projecting or spatulate.

The data in regard to the teeth are not sufficiently complete to enable us to draw any conclusions as to the average time of eruption of the third molars (although they seem to erupt late), or as to the extent they fail of eruption. It is evident, however, that dental caries is less extensive and the teeth more enduring in the Quichua than in the more highly civilized races, and that the third molars are more persistent and perhaps less vestigial in character. Dr. Nelson's observation that dental caries is much more extensive among the Indians who live near the sugar plantations and consume much more sugar than the Indians in other places, tends to confirm a long-time popular belief that an excess of sugar hastens dental decay.

The following chart shows the number of teeth present in each individual and the extent of caries:—

DENTAL CHART OF 145 QUICHUA

Serial number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Age	60	19	50	25	19	45	17	27	37	22	19	28	39	22	30
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. of teeth	28	28	32	29	29	30	28	32	28	32	28	30	31	32	31
No. of third molars	2	0	4	1	4	4	0	4	0	4	0	2	4	4	3
No. of carious teeth	2	0	0	1	3	2	2	0	2	0	0	0	0	2	5

Serial number	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Age	28	20	20	50	80	27	40	50	18	30	38	32	27	30	60
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. of teeth	32	28	30	27	30	30	32	32	28	32	32	32	31	30	28
No. third molars	4	0	2	4	4	2	4	4	0	4	4	4	3	2	1
No. carious teeth	0	0	0	5	2	0	1	0	0	4	0	0	0	0	0

Serial number	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Age	55	27	80	28	30	32	28	40	62	48	18	88	27	30	40
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. of teeth	22	32	27	32	32	30	31	32	32	32	28	31	32	31	32
No. third molars	0	4	3	4	4	2	3	4	4	4	0	4	4	3	4
No. carious teeth	5	0	4	0	0	0	1	0	0	2	0	0	0	0	1

Serial number	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Age	32	40	46	27	36	42	28	19	58	48	35	32	42	52	40
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. of teeth	32	32	32	30	30	28	32	28	25	32	30	31	24	30	32
No. third molars	4	4	4	2	2	0	4	0	0	4	2	3	0	2	4
No. carious teeth	0	1	0	6	0	12	0	0	1	0	0	0	4	6	3

Serial number	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Age	40	19	18	48	18	35	35	68	69	36	47	49	38	46	22
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. of teeth	29	28	30	32	28	29	32	32	32	24	30	30	32	32	32
No. third molars	3	0	2	4	0	1	4	4	4	4	2	2	4	4	4
No. carious teeth	3	0	0	0	0	5	0	8	3	7	4	3	3	0	1

Serial number	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Age	40	27	25	45	28	48	26	22	27	18	28	26	30	35	30
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. of teeth	32	32	31	30	32	32	31	28	30	28	32	31	28	27	32
No. third molars	4	4	3	2	4	4	3	0	4	0	4	3	0	0	4
No. carious teeth	1	4	1	0	0	2	5	0	0	1	0	0	6	4	0

Serial number	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Age	35	60	48	50	40	50	50	50	28	23	21	38	50	28	25
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. teeth	30	26	30	30	19	28	30	27	30	23	28	30	32	29	29
No. third molars	2	2	3	2	0	3	4	1	2	0	0	3	4	3	1
No. carious teeth	4	6	8	0	5	3	5	1	1	4	0	2	0	1	0

Serial number	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Age	32	55	38	27	26	36	35	30	23	35	38	18	35	50	35
Sex	M	M	M	M	M	F	M	M	M	M	M	M	M	M	M
No. of teeth	32	17	4	22	26	32	31	32	28	32	31	28	31	25	30
No. third molars	4	0	0	1	0	4	3	4	0	4	4	0	4	0	4
No. carious teeth	2	5	0	0	6	4	0	0	1	0	2	0	0	3	2

Serial number	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
Age	40	42	62	30	35	30	35	48	45	30	45	40	28	35	45
Sex	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
No. of teeth	28	30	32	27	32	30	31	25	32	27	22	28	31	28	28
No. third molars	0	2	4	0	4	2	4	0	4	0	0	1	3	4	2
No. carious teeth	2	2	3	5	1	1	2	5	0	0	8	2	0	3	3

Serial number	136	137	138	139	140	141	142	143	144	145
Age	27	22	48	29	48	40	35	48	35	38
Sex	M	M	M	M	M	M	M	M	M	M
No. of teeth	28	29	29	32	21	30	31	30	32	28
No. third molars	0	1	4	4	0	4	3	2	4	2
No. carious teeth	3	2	2	0	1	0	0	1	0	4

Skin and Hair

The color of the skin varied from a light to a dark brown. In the mixed, the skin was distinctly lighter than in the pure. No

special oily appearance was evident nor any characteristic odor that might be considered peculiar to the race. The pilous system on the body was either absent or only slightly developed. In two cases only was it considered medium in amount. No tattoo marks were observed. Freckles were found in seven cases and limited to the face and arms. Naevi, mostly small and in several cases multiple were found in twenty-eight subjects. These were situated on various parts of the face in all except three cases, in which they were located on the back shoulder, and anterior thoracic region respectively. The scalp hair was black in all the cases examined and straight in all but three. In these the hair was slightly curly. One (No. 137) of the three was mixed Spanish, the others were pure blood Quichua (Nos. 153 and 210). Forbes (7) says that the hair of the Aymara is perfectly straight, without any attempt to curl, and is rather fine in texture and never as coarse as the hair of the Spaniards or half-castes. He adds that the hair is said never to fall and that he has never seen a pure Indian, man or woman, with gray hair, no matter how old. The scalp hair of the Quichua was abundant in all but twelve cases. Calvities was observed in only one case, a man eighty years old, in whom the hair was becoming thin on the vertex. The lack of grayness among the Quichua was remarkable, but contrary to Forbes' experience with the Aymara a few gray hairs were found in three men, one of forty-five years, another of sixty years, and a third eighty years old. Some men wear the hair long and braided.

The Quichua, as a rule, is without beard or with a few straggling hairs on the lip, chin, or side of the face, but in forty-five cases a small moustache was present, and in twenty-five a small goatee. Of the forty-five having moustaches fifteen were mixed (white). Four may be said to have a distinct hairy covering of the face. Two of these were mixed (white).

Forbes (7) says of the Aymara that the men are beardless and rarely have any trace of hair on the face except that in some older men a few straggling short hairs occur on the upper lip, but never as much as could be entitled to the appellation of moustache. Evidently the Quichua is quite different in this respect or we are

unwittingly dealing with a mixed rather than a pure Quichua. While the mixed race for the most part showed an increase of hair on the face, yet some 35 percent of the mixed cases showed no such increase.

Finger Patterns

The impressions of the fingers and thumb tips of the right hand were taken in one hundred and four cases. The classification of the patterns on each finger gives the following result. In the thumb, whorls were found in 79.8 percent of the cases, ulnar loops in 16.3 percent, arches in 1.9 percent and radial loops in 1.9 percent.

In the index finger, whorls were found in 38.2 percent, ulnar loops in 17.6 percent, arches in 19.6 percent, and radial loops in 24.5 percent. In the middle finger, there were whorls in 35.5 per-

Fig. 2.—Finger impressions of right hand, showing pattern most common for each finger.

cent, ulnar loops in 51.9 percent, arches in 11.7 percent, and radial loops in 0.9 percent. In the fourth finger, there were whorls in 62.1 percent, ulnar loops in 35.9 percent, arches in 1.9 percent; radial loops were absent. In the fifth finger, there were whorls in 14.5 percent, ulnar loops in 78.6 percent, arches in 6.8 percent; radial loops were absent. Whorls and ulnar loops were by far the most common patterns (fig. 2).

Galton found in the English 90 percent loops on the fifth finger, 77 percent on the third finger, and the whorl was the most frequent pattern on the first and fourth finger.

Very few observations of racial finger patterns have been made. The first two columns of the following table are taken from Martin (12):—

	Poles (Loth), Percent	Hindus (Schlaginhaufen), Percent	Quichua (Average of All Fingers), Percent
Arches	12	1.6	8.4
Radial loops	7	2.7	5.6
Ulnar loops	56	59	40.2
Whorls	24	36	45.8

There are evidently marked individual differences in the kind of finger patterns; whether there are characteristic racial differences further observations alone can tell. It is to be regretted that no impressions of the palms or the soles were obtained.

Ears

The breadth of the ear was measured from its line of attachment to the most remote point on the posterior margin; the length, from the top of the ear to the lower margin of the lobe.

The average physiognomic length of the ear in the mixed Quichua is 62 mm., the extremes 67 and 53, and the range 14. In the pure, the average is 60.9, the extremes 72 and 50, and the range 22. The pure have a shorter ear and a greater range of variation than the mixed. The following table shows the subdivisions of the Quichua based on the ear length:—

Index		Quichua Mixed, Percent	Pure, Percent
–54.9	Hypermicrotic	4.9	4.1
55–59.9	Microtic	27.0	29.2
60–64.9	Mesotic	45.8	40.8
65–	Macrotic	22.2	25.8

The average ear length of the pure Quichua (60.9) is almost the same as the South American Indian (60, Ehrenreich) but less than that of the Shoshoni (65.2, Boas) and the Eskimo (67.5, Duckworth (5)).

The physiognomic ear breadth averages in the mixed 35.0. The extremes are 44 and 30 and the variation range is 14. In the pure the average is 36, the extremes 57 and 30, and the range 27. This is a greater average than the majority of races show, racial variation being from 26.9 to 39.1 and it is distinctly greater than in the Eskimo (31.1, Duckworth (5)).

The physiognomic ear index averages for the mixed 58.3, the greatest 65.6, the least 50, and the range of variation 15.6. In the pure, the average index is 59.5, the greatest 93.4, the least 47.6, and the range 45.8.

The average index is somewhat greater in the pure, but the variation range is markedly greater. Martin's (12) compiled table of the average index in different races shows a range from 52.8 to 66.2. The Quichua is, therefore, intermediate among the races in respect to the ear index, which is very similar to that of the Colorado Indian (59.0) and distinctly greater than that of the Eskimo (53.0, Duckworth (5)).

Chervin (2) gives for the physiognomic ear length of the Quichua an average of 61 with extremes of 68 and 55, and for the ear breadth an average of 35 with extremes of 31 and 45. He finds that the average physiognomic ear index is 57, with extremes of 69 and 46.9. His results therefore are not entirely similar to ours.

The auriculo-temporal angle was not measured, but judged as small, medium, or large. The proportion was as follows: 38.7 percent have a small auriculo-temporal angle, 53.5 percent a medium and 7.7 percent a large angle.

Ear anomalies were remarkably few, one blending lobule and one large lobule were found and in two cases the antitragus was recorded as continuous with the origin of the helix. Darwin's tubercle was present in only one case. One example of partially rolled helix was found (No. 14).

The seriation table of ear measurements given in the appendix shows in the pure Quichua a greater range of variation in ear length and the ear index, and a relatively greater proportion with higher indices.

Nose

The observations on the shape of the nose were confined to the dorsum, base, nostrils, the height and breadth and their relation. The dorsum was straight in 29.7 percent, concave in 11.7 percent, convex in 15.2 percent, and sinuous in 43.4 percent. The straight or sinuous dorsum, therefore, is the predominating form. Martin (12) says the straight dorsum is the form principally found in the

South American Indians. The nostrils were markedly divergent in 47.2 percent of cases, slightly divergent in 26.4 percent, and medium in 26.4 percent.

The shape of the root of the nose depends on the shape and arrangement of the nasal bones, the nasal processes of the maxillae, the nasal portion of the frontal, and the degree of forward development of the mesethmoid. The root of the nose in the Quichua was found depressed in 8.5 percent, medium in 64.6 percent, and high in 26.9 percent. Nos. 107 and 196, pl. XVII and XXX, illustrate the depressed type of nasal root among the Quichua and Nos. 40 and 93, pl. VI and XV, the prominent type.

The height of the nose was measured from the nasion to the subnasal point. The nasion can be determined by moving the skin up and down at the nasal root and in most cases seems to correspond fairly closely with the lower edge of the median end of the eyebrows. The length of the base was measured from the pronasal point to the point of attachment of the nasal ala posteriorly. The breadth of the nose was the greatest distance between the alae at the lower border. The nasal index is the relation of the breadth to the height and not to the length. Forbes (7) describes the nose of the Aymara as almost invariably aquiline, in many cases curved inwards at the point; the nostrils are usually broad at the base, open and expanded. The nose of the Quichua seems to differ from that of the Aymara as described by Forbes chiefly in the fact that it is less frequently aquiline.

In the mixed Quichua the average height of the nose is 46, the greatest 52, the least 39, and the variation range 13.[1] In the pure blood the average is 47 with extremes of 54 and 39, and a variation range of 15. The nose breadth averages in the mixed 37 with extremes of 41 and 32, and a variation range of 9. In the pure the average is 38, the extremes 49 and 30 ♀ or 32 ♂ and the range 19 or 17. The length of the base in the mixed averages 34, the extremes are 39 and 30, and the range 9. In the pure the average is 35, the extremes 57(?) or 40 and 30, and the range 27(?) or 10. The nose of the pure Quichua is higher and broader on the

[1] For the table of average and extreme nose measurements, see the appendix.

average and with a greater range of variation than in the case of the mixed. This is true also of the base. The Quichua is intermediate among the races in respect to nose height but below the mid-position in breadth, the height varying racially from 41.7 to 52.2 and the breadth from 35.0 to 44.

The physiognomic nasal index averages 82.2 in the mixed Quichua with a maximum of 97.4, a minimum of 69.4, and a range of 28.0. In the pure blood the average is 81.8, the maximum 102.5, the minimum 65.4, and the range 37.1. The pure differs from the mixed in having a slightly smaller index and a greater variation range. This index in the Quichua is somewhat greater than in the Sioux (75.9) and slightly less than in the Shoshoni (83.1, Boas).

The following table illustrates the grouping of the Quichua according to the nasal index:—

	Entire Group, Percent	Pure, Percent	Mixed (White), Percent
Leptorrhine (55–69.9)	6.2	6.6	4.2
Mesorrhine (70–84.9)	61.4	61.2	62.5
Chamaerrhine (85–99.9)	29.6	28.9	33.3
Hyperchamaerrhine (100)	2.8	3.3	——

This table shows no hyperchamaerrhine cases in the mixed and a greater percent of leptorrhine among the pure Indians. Approximately the same percentage in both groups are mesorrhine.

The following selections from Martin's (12) compiled table show the interracial position of the Quichua (average nasal index, 81.8):—

NASAL INDEX IN THE LIVING (MALE)

Leptorrhine (55.0–69.9)

Armenian....60.4
Athapascan (Tahltan)....62.6
Eskimo....64.1
French....67.3

Mesorrhine (70.0–84.9)

Chinese from Setschuan....72.9
Tsilcotin....74.2
Sioux....75.4
Malay....82.6
Shoshoni....83.1

Chamaerrhine (85.0–99.9)

Taytay—Filipinos....85.2
Fan....91.1

Hyperchamaerrhine (100.0–)

Zambesi Negro....101.5
Bushman....102.5
Australian....107.6

The degree of depression of the root of the nose of the Quichua as determined from the photographs, may be grouped in three classes with the following results: marked 8.5 percent, medium 64.6 percent, slight 26.9 percent. The markedly depressed nasal root is seen in the Bushman and the very high type in the classical Greek.

The seriation tables given in the appendix illustrate the extent of variability in the different measurements in the pure and mixed.

Soft Parts of Face

The lips were grouped into four classes: thick, thin, medium, and everted. The lips were thick in 40.6 percent, medium in 46.2 percent, thin in 1.6 percent, and everted in 11.6 percent of the cases. In no case was eversion extreme and the marked examples were wholly among the pure Quichua. The Quichua undoubtedly shows a greater proportion of thick and everted lips than the white races. The *rima oris* was not measured.

The following observations relating to the curve and direction of the lips, the philtrum, and labio-nasal sulcus were obtained from the photographs. A study of the shape and direction of the lips shows that in the pure blood procheily exists in 72 percent, orthocheily in 27.1 percent, opisthocheily in .9 percent. In the mixed, orthocheily is predominant. The proportions are: procheily 29.2 percent, orthocheily 62.5 percent, opisthocheily 8.3 percent. The line of the upper lip (vertically) in the pure Quichua convex is in 4.7 percent, concave in 54.7 percent, and straight in 40.6 percent. In the mixed the percentages are: concave 47.6 percent, straight 52.4 percent. In the pure blood the philtrum is marked in 12 percent, medium in 55 percent, small in 33 percent, while in the mixed the philtrum is marked in 19 percent, medium in 71.4 percent, small in 9.6 percent of the cases. The philtrum is, therefore, on the whole, better developed in the pure Indian than in the mixed.

The labio-nasal sulcus in the pure blood is of medium development in 21.4 percent of the cases, marked in 23.2 percent, slight in 40.2 percent, absent in 15.2 percent, while in the mixed it was absent in no instance, of medium development in 30.4 percent of cases,

marked in 26.1 percent, and slightly developed in 43.5 percent. This sulcus is then more constant and somewhat better developed in the mixed Quichua than in the pure blood. The upper lip in the pure Indian is long (vertically) in 7.6 percent of cases, short in 30.8 percent, and of medium length in 61.6 percent. In the mixed, 17.4 percent were short, 82.6 percent were medium. There were no cases classified as long.

The epicanthus was present in twenty-four cases, or 15 percent, but in six of these it was only slightly marked. This fold is seldom found in the white adult, although frequently present in childhood. At the end of the first year about 25 percent exhibit this fold, but it disappears during growth, so that between the ages of twelve and twenty-five only 33 percent of cases show this fold. The epicanthus is therefore more frequent in the Quichua than in the white races.

The palpebral fissures were horizontal in 73.5 percent of cases, inclined, *i. e.*, with outer angle higher, in 26.5 percent. Accurate measurement would probably show that even in many of the cases considered horizontal the external angle was slightly higher than the internal. Martin (12) states that the South American Indians are intermediate in this respect between Europeans and Mongolians.

The *plica semilunaris* in all the cases showed only a medium development.

The malar region was broad in one hundred and twenty-two cases, medium in two, and narrow in thirteen, and there was no record in eight instances. In twenty-nine out of one hundred and thirty-nine cases it was distinctly forward-projecting; slightly projecting in sixty.

Height Measurements and Indices

The tallest Indian (No. 93) measured was 1,770 mm., but he was not pure Quichua. The tallest pure Quichua was 1,713, the shortest pure blood 1,422 (No. 41), the shortest mixed 1,337, giving a range of variation in the total group of 433 or of 291 in the case of the pure Quichua. The only female measured (No. 111) was 1,426 in height. The average height of the pure Quichua male

was 1,583 and of the mixed 1,587. Chervin's (2) measurements of the male Quichua, seventy-five in number, gives the tallest as 1,707, the shortest as 1,477 with a range of variation of 230 mm. and an average of 1,580. The following compiled table will make possible a comparison of a few races with the Quichua:—

Race	Height	Author
Quichua	1,600	d'Orbigny
Quichua	1,580	Chervin
Quichua (male)	1,583	Yale–National Geographic Society Peruvian Expedition of 1912.
Laplander (Russia)	1,558	Anutschin
Veddah	1,533	Sarasin
Igorot	1,549	Bean
Japanese	1,593	Miwa
Labrador Eskimo	1,575	Boas
Labrador Eskimo	1,577	Duckworth
Labrador Eskimo	1,552	Hrdlička
Spaniard	1,620	Oloriz
Belgian	1,655	Honzé
Serb	1,699	Lazarevitch
Yuki (Cent. Cal.)	1,590	Boas
Shoshoni	1,661	Boas
Sioux	1,726	Boas
English	1,728	Pearson

A table in the appendix gives the averages, extremes, and ranges of variation of the various body measurements and includes also the indices derived from these measurements.

The average male stature of 1,583 places the Quichua in Topinard's "low stature" group (below 1,600). The difference in height of the pure Quichua (1,583) and the mixed Quichua (1,587) is quite small and shows therefore little effect of the mixture, which is not surprising in view of the fact that the Spanish is a short race (1,620).

A consideration of the seriation table given in the appendix shows that only three cases out of one hundred and twenty-one belong to Topinard's "high stature" group, while 68 or 56 per-cent belong to his "low stature" group. It is interesting to note that the greatest and least statures are in the mixed group. Although it is impossible to estimate the effect of the environment

on the stature in the case of the Quichua, short stature is almost certainly a racial character. Deniker (3) in his list of American ethnic groups of low stature enumerates only the Carib of the three Guianas and Venezuela, Eskimo of Labrador, Yahgan and Alakaluf, Fuegians, Manuhe, and Mundurucus. This list should also include the Quichua.

A comparison of the statures of the different races shows that the Quichua is only a little taller than the Labrador Eskimo (1,575), and a trifle less in height than the Japanese (1,593), and belongs to the upper portion of the low stature group. Chervin (2) finds that the average stature of the mixed (white) Quichua (10 cases) is 1,618, while our average is 1,587 for twenty-four cases. An examination of the seriation table of stature shows very little difference in the grouping of the mixed and pure according to height.

The heights to chin, to presternal notch, and to acromion were the greatest in Number 93 (mixed), who was also the tallest. No conspicuous differences are to be noted here in the mixed as compared with the pure blood. Chervin's measurements of the Quichua did not include the above-mentioned measurements, so comparison is impossible. The height sitting or body height, measured with the auriculo-infraorbital line horizontal, varies less than the stature; the range of variation in the stature being 433, while in body height it is only 184. This indicates that variation in stature is due more to the variation in length of the lower limb than of the body. Our measurements show an average height sitting of 836 with 909 for the greatest and 725 for the least among the pure bloods, while the mixed show an average of 842 with 892 for greatest and 751 for the least. In this case the range of variation is less in the mixed than in the pure. Chervin (2) (10 cases) found an average body height of 840 with a range of 930 for the greatest and 760 for the least in the case of the pure, and an average of 865 for the mixed, with a variation of 114 from the maximum 908 to the minimum 794. Chervin (2) gives the body height of the French as 880, Duckworth (5) that of the Labrador Eskimo as 810 for the male and 797 for the female. The single female Quichua measured had a body height of 794. This is considerably less than the average of the

male. This height averages in the English male 905, which is almost equal to the greatest body height found in the Quichua (909).

The relative height sitting as shown by the height sitting-stature index in the entire group is 52.2, the greatest 56.8, and the least 48.4, which gives a range variation of 8.4. In the pure Indian the average is 51.6, while the greatest and least are in this group. In the mixed the relative sitting height is greater, as indicated by the average index of 53.0. Martin (12) gives the sitting height index in the male polar Eskimo as 52.5 and in Englishmen as 52.4. Chervin (2) found in the male Quichua that the greatest index was 56.24, the least 48.25, the variation 7.99 with an average of 52.0. Chervin gives the average among the French as 53.0. Boas (1) gives 52.6 to 53.5 for this index in the Alaskan Eskimo. Martin (12) gives 52.2 for the height sitting-stature index of the Shoshoni. According to his table this index varies from 46.5 in the Australians to 54.8 in the Ainos. This index is high at birth and decreases during growth from about 66.5 at birth to 52.6 in the adult (Martin (12)). A high index is therefore an infantile characteristic. The seriation table of the relative height sitting shows that a greater proportion of the mixed than of the pure Quichua have indices of 53 or over.

The height to the knee was measured to the apex of the patella with the leg in full extension. This probably does not give the length of the leg and height of foot as accurately as to take for the proximal point the upper margin of the internal tuberosity of the tibia. The length of the leg was estimated by subtracting the internal malleolar height from the knee height as taken above; therefore the leg length includes the internal malleolus. In the entire group we find the average knee height to be 428 with extremes of 345 and 489, and a range of variation of 144. The pure have an average of 427 with extremes of 377 and 489, and a range of 112. The mixed show an average of 429 with extremes of 345 and 488, and a range of 143. Here the mixed Quichua shows a greater range of variation than the pure. On the other hand the range of variation in the height of the internal malleolus is greater in the

pure (34) than in the mixed (19). This height is subject to variation even in the individual due to changes in the height of the arch of the foot.

The extremes of height kneeling in the entire group were 1,032 least and 1,319 greatest, with an average of 1,194, giving a range of variation of 287. This is much greater than the variation in height sitting, and shows a greater degree of variation in the thigh length than in the body length. The average height kneeling in the pure Indian is 1,196 with 1,066 the least and 1,296 the greatest, with a variation of 230, while in the mixed it averages 1,184 with extremes of 1,032 and 1,319, and a range of 287. The mixed here show a greater range of variation than the pure. The seriation tables in the appendix show the proportions at various heights.

The average height to the umbilicus in the total number of cases is 936, with 1,094 as the greatest and 750 the least and a range of variation of 344. In the case of the pure Indians the average umbilical height is 936, the greatest 1,034 and the least 833, with a variation of 201, while in the mixed the average is 934 with 1,094 as the greatest and 750 the least, and a range of variation of 344. Here the extremes and the greatest range of variation are in the mixed group.

MEASUREMENTS RELATING TO THE UMBILICUS

	Quichua			Univ. Calif. Students, (M. M. Johnson)	New Zealander (Weisbach)	Chinese (Weisbach)	Australian (Weisbach)
	Entire Group	Mixed (White)	Pure				
Sternal notch to umbilicus, av.	352	354	345	374.8	440	369.5	400
Per cent. of total height, av.	22.2	22.3	21.8	21.6	25.0	22.6	23.8
Av. hgt. vertex to umbilicus	649	653	648				
Dist. of umbilicus above mid-point of body	143	140	144	About 160			
Relative height of the umbilicus to the stature	59.0%	58.9%	59.7%				

Tillaux found that the average distance from the vertex to the umbilicus in the European was 640, or about 200 above the mid-point of the total height. M. M. Johnson (10) showed that the

average distance above the mid-point in a certain group of college students was about 160 mm. The distance of the umbilicus above the mid-point in the Quichua is distinctly less than that given by Johnson or Tillaux, as stated above. In the pure Quichua the umbilicus is slightly higher than in the mixed. Martin (12) gives the relative height of the umbilicus to the stature as 57.7 in English male students, 59.4 in Jews, 60.9 in the French of Normandy, 59.7 in the Chinese, 60.9 in the Soudan Negroes, 59.3 in the Australians, and 57.9 in the Colorado Indians. The average height of the umbilicus relatively to the average stature in the pure Quichua is 59.2 and 58.9 in the mixed. It is therefore similar to that of the Chinese, greater than that of the English, and smaller than that of the Soudan Negro. The position of the umbilicus relative to the trunk length is of more importance than its relation to the stature on account of the variability of the length of the lower extremities. However, the data necessary for its determination in the case of the Quichua are lacking. The seriation table shows that the umbilical height lies between 880 and 989 in 81 percent of the pure Quichua and in 70 percent of the mixed Quichua.

Breadth Measurements and Indices

In the pure Quichua the average biacromial breadth is 381 with a range variation of 99, while in the mixed the average is 382 with a range variation of 96. The relative shoulder width to the stature in the pure Quichua is 24.0, with a range variation of 5.7, and in the mixed (white) 23.9, with a variation of 3.5. The variation, therefore, in the relative shoulder breadth is greater in the pure Quichua than in the mixed. Duckworth (5) gives 379 as the biacromial breadth for the Eskimo (10 males) with a stature of 1,577 and a relative shoulder breadth of 23.4. This index does not show important racial differences. The short races generally are likely to be in the broad-shouldered class. The seriation table shows that most of the pure Quichua have a biacromial breadth lying between 365 and 409, and a shoulder width-stature index between 22.4 and 25.5. The relative shoulder breadth of the Quichua (24.3) is greater than that of the races given in Martin's

(12) table with the exception of the Kalmuck, the Formosan, the Togo, Duala, and the Bakairi. Chervin (2) in his measurements of the Quichua does not include the data necessary for the determination of the relative shoulder breadth. This index is low in the newborn (21.1, Martin (12)).

In the mixed Quichua the bitrochanteric diameter varies from 314 to 268 with an average of 298 and a range of variation of 46. In the pure-blooded Indian the extremes are 341 and 271, with an average of 304 and a range of variation of 70. The pure, therefore, have a greater hip width and a greater range of variation than the mixed. The average bitrochanteric diameter relative to the average stature is in the mixed Quichua 18.8, while in the pure blood it is 19.2. The following is taken from Martin's (12) table of the hip width-stature index for males:—

Parisians.....18.5		Chinese.....19.0
Russians.....18.7	Kalmucks.....19.8	Bushmen.....16.4
Japanese.....18.6		Colorado Indians...18.3

The Quichua stand high in this list. Racial differences are, however, not marked nor characteristic in the case of the hip width index. Chervin (2) unfortunately does not include the bitrochanteric breadth in his list of measurements. The seriation table shows that the great majority of the pure Quichua lie between 285 and 329 in bitrochanteric breadth.

The hip width-shoulder width index (stammbreiten-index) $\left(\frac{\text{bitrochanteric breadth} \times 100}{\text{biacromial breadth}}\right)$ in the entire group of Quichua gives extremes of 90.9 and 71.7 with an average of 79.2 and a range of variation of 19.2. In the case of the mixed the extremes are 84.7 and 72.8, the average is 78.1, and range of variation 11.9. In the pure Quichua the extremes are 90.9 and 71.7, with an average of 79.3 and a range of variation of 19.2. The pure show greater variation here than the mixed. Martin (12) gives among others the following examples of this index in males: M' Baka 75.1, Bushmen 81.9, Chinese 82.3, and the Parisian 83. The Quichua have, therefore, relatively broad shoulders in respect to hip width as compared with most races.

Upper Extremities

In the entire group the average span of the Quichua is 1,621, with extremes of 1,762 and 1,371, and a range of variation of 391. In the mixed the average span is 1,623, with extremes of 1,760 and 1,371, and a range of 389. In the pure Indian, the average is 1,620, with extremes of 1,762 and 1,458, and a variation of 304. In this measurement the mixed show a greater range of variation than the pure.

The span-stature index or relative span in the entire group shows an average of 102.3, with extremes of 107.3 and 93.7, and a variation of 13.6. The mixed blood shows an average of 102.7, with extremes of 107.0 and 93.7, and a range of variation of 13.3. The pure Quichua gives the same average, extremes, and range of variation as the entire group.

The following relative span indices are taken from Martin's (12) table of relative spans in different races: Russian 103.3, French (Collignon) 104.4, Swede 104.0, Chinese 102.1, Japanese 102.6, Aino 105.9, Bushmen 102.1, Dschugga 108.6, Australian 104.9, Polar Eskimo 99.3, Koukpagmiut Eskimo 102.5, Colorado Indian 100.7, and Brazil Indian 104.5. As seen from this table the Quichua are low in relative span as compared with other races and are about the same as the Japanese, Chinese, and certain of the Eskimo. Unfortunately, it is impossible to compare our results with Chervin's (2) for the Quichua, as in the determination of the "crucial index," he uses the span for the base $\left(\frac{\text{stature}}{\text{span}} \times 100\right)$ while we have taken the stature as the base. The seriation tables show that 92 percent lie between 99 and 105.

The length of the arm was measured from the lower edge of the acromion process to the interval between the external epicondyle and the head of the radius. The average arm length in the entire group is 290 with 337 and 233(?) or 241 as extremes, and a variation of 104(?) or 96. In the mixed Quichua the average is 294 with 315 and 241 as extremes, and a range of 74, while in the pure Quichua the average is 292 with extremes of 337 and 233(?) or 252, and a variation of 104(?) or 85. The pure Quichua are therefore more

variable in respect to arm length than the mixed, according to these figures. The arm is short as compared with the white races and is shorter in the pure Quichua than in the mixed. The seriation table of arm lengths shows that 94 percent of the pure Quichua lie between 265 and 319. Little difference in this respect is observed between the pure and mixed. The relative average arm length to the average stature shows an average in the pure Quichua of 18.4 and in the mixed of 18.5. This index varies in the different races from 17–21. The Quichua agrees with the Japanese and the North and East.

The relative length of the upper extremity to the stature in the mixed Quichua is 46.0 with extremes of 47.9 and 43.5, and a range of variation of 4.4. In the pure the average is 45.5 with extremes of 47.7 and 41.4, and a range of variation of 6.3, showing a greater range than the mixed.

This index varies in different races from 43.1 to 48.5, according to Martin (12), and does not vary with the height to the same extent as the lower extremities. Both the pure and mixed Quichua, according to these measurements, belong to the long-arm group of races (above 45). Others belonging to this group are certain Asiatics and European races, as well as a few tribes of North American Indians. It must be remembered, however, that the length of the upper extremity in this series of measurements is the sum of the length of the arm, and the forearm and hand measured from the olecranon process. This gives a greater result than the total length of the extremity measured from the acromion to the distal end of the middle finger, or the sum of the length of the arm plus the length of the forearm from the radial head to the stylion plus the length of the hand. Racial differences in this index are not clearly evident and undoubtedly much confusion exists because of lack of uniformity in the methods of measurements.

The length of the hand was measured from the interstyloid line to the end of the middle finger. In the mixed Quichua the average length was 175 with 192 and 153 as extremes, and a range of variation of 39, while in the pure Quichua the average is 174, with 197 and 156 as extremes and a variation of 41. The relative

hand length to stature in the mixed Quichua gives an average of 11.0 with 11.5 and 10.2 as extremes and a range of variation of 1.3. In the pure Quichua, the average is 10.9, the extremes 12.2 and 9.6 with a range of variation of 2.6. The Quichua have therefore a relative hand-length slightly less than the Mongoloid races and about the same as the North American Indians. The average hand length relative to the average length of the entire upper extremity is 24 in the mixed Quichua and 24.1 in the pure Quichua. This index shows a racial variation from 22.7 to 25.5. The Chinese are given by Martin (12) as having an index of 25.3 and the Quichua are high in the list.

The following table makes possible a comparison of our measurements of the Quichua with those of Chervin (2):—

	Chervin	Yale-N. G. S. Exp.
Length of forearm and hand, Maximum	480	481
Minimum	395	381
Average	436	430
Range of variation	85	100
Forearm and hand length to stature	26 percent	27.1 percent

The relative length of the average arm and forearm to the average stature gives an average of 34.8 for the mixed and 34.5 for the pure Quichua. Chervin does not include this index, and few statistics for the races are available on this point. The index varies from 32.4 to 35.4 according to Martin's (12) table. The Quichua therefore occupies a position above the average in this respect. The forearm-arm index for the mixed Quichua is 87.6 with extremes of 100.3 and 82.0, and a variation of 18.3. For the pure Quichua the average index is 88.1 with maximum of 116.7(?) or 99.6 and minimum of 77.4 and a range of 39.3(?) or 22.2. This index is somewhat larger than the humero-radial, the corresponding skeletal index. In general, the Europeans are brachy-kerkic, the Mongolians and the Americans intermediate, while the Negroids are dolicho-kerkic. The index of 88.1 places the Quichua high in the dolicho-kerkic group. The index 116.7 obtained for No. 67 is probably incorrect, although this cannot be stated with certainty. Chervin did not determine this index for the Quichua.

Lower Extremities

No satisfactory method has as yet been devised for estimating the length of the thigh in the living person. The difficulty consists principally in finding an upper point readily accessible and fixed from which it is possible to measure the physiological length of the femur. So we find some anthropologists using the anterior superior spine of the ilium, others the pubic spine, and still others the upper border of the great trochanter. This variety in method makes it difficult or impossible to compare the thigh measurements made by various observers. The difference between the kneeling and sitting height was chosen here as indicating the thigh length. This makes the thigh somewhat shorter than the physiological femur length. In the entire group the thigh length ascertained as explained above was found to average 358 with extremes of 430 and 281, and a range of variation of 149. For the mixed the average is 352 with extremes of 430 and 281, and a range of variation of 149. For the pure the average is 360, with extremes of 415 and 293, and a range of variation of 122. The average thigh length in the pure blood is therefore distinctly greater than in the mixed. The relative average thigh length to average stature $\left(\frac{\text{thigh} \times 100}{\text{stature}}\right)$ in the mixed Quichua is 22.2 and in the pure 22.7. This index varies in the different races according to Martin's (12) table from 22.5 to 26.2. Since these indices given by Martin (12) were obtained on the basis of a thigh length measured from the top of the great trochanter, comparison with our results is impossible. Chervin did not determine this index for the Quichua. Racially the thigh length seems to vary in about the same proportion as the total length of the lower extremity.

The length of the leg was obtained by subtracting the internal malleolar height from the height to knee, measured to the apex of the patella. In the mixed Quichua the average is 357 with extremes of 413 and 282 and with a variation of 131. For the pure blood, the average is 353 with extremes of 410 and 306 and a variation of 104. The mixed here show a more extensive range of variation than the pure. The relative average leg length to average stature

$\left(\frac{\text{leg} \times 100}{\text{stature}}\right)$ in the mixed Quichua is 22.5 and in the pure 22.3. This index varies racially according to Martin (12) from 21.2 to 28. This index in the Quichua agrees nearly with that of many of the eastern Asiatics, certain African tribes, and the Colorado Indians. Variations in this index do not seem to be distinctive as a racial character.

The ratio of the average length of the lower extremity to the average height sitting $\left(\frac{\text{lower extremity} \times 100}{\text{height sitting}}\right)$ in the mixed Quichua is 88.5, in the pure 89.5. This index places the Quichua high in Manouvrier's mesatiskel group.

The thigh and leg length in the mixed Quichua averages 710, with extremes of 843 and 563, and a range of variation of 280. In the pure the average is 707 with extremes of 807 and 608, and a range of 199. In this instance the mixed shows a distinctly greater range of variation than the pure. The average thigh and leg length relative to the average body length (or height sitting) in the mixed Quichua is 84.3, and in the pure it is 84.6.

The relative lower extremity length

$$\left(\frac{\text{length of lower extremity} \times 100}{\text{stature}}\right)$$

in the mixed shows an average of 46.9 with extremes of 49.8 and 43.8, and a range of variation of 6.0. In the pure the average is 47.2 with extremes of 51.5 and 43.1, and a variation of 8.4.

In estimating this index the length of the lower extremity is the difference between the standing and the sitting height. This index varies in the different races from 46.3 to 49.7. The Tartars and some American Indians have an index about equal to that of the Quichua.

Chervin (2) gives this index for the Quichua as 47 with extremes of 51.44 and 43.75, and a variation of 7.69. This agrees quite closely with our results.

The Quichua are therefore a race with relatively short lower extremities.

The average leg-thigh index in the mixed Quichua is 103.4,

with extremes of 120.2 and 93.5, and a range of variation of 26.7. In the pure the average is 98.5 with extremes of 118.4 and 80.9, and a variation of 37.5. Martin (12) gives this index as varying racially from 84 to 97 when the thigh is measured from the great trochanter. The indices given above for the Quichua are higher than if obtained by the method used by Martin. Some of them are so surprisingly high that one suspects the possibility of an error in recording the measurements. It is clear, however, that the Quichua is dolichocnemic, while the Japanese and Eskimo are brachycnemic.

In the mixed Quichua the foot length averages 245 with extremes of 270 and 196, and a variation of 74. In the pure the average is 244 with extremes of 274 and 212 ♀ or 220 ♂, and a variation of 62 or 54. Chervin gives 270 for the maximum foot length of the Quichua, 207 for the minimum, 238 for the average, and 63 for the range of variation. The relative foot length $\left(\frac{\text{foot length} \times 100}{\text{stature}}\right)$ averages in the mixed Quichua 15.3 with a maximum of 16.4, a minimum of 14.4, and a variation of 2.0. In the pure the average is 15.1, the extremes 16.3 and 14.1, and the variation 2.2. Chervin found for the Quichua a maximum relative foot length of 16.53 and a minimum of 13.16, with a variation of 3.37 and an average of 15. His results here agree fairly closely with ours. Racially this index varies from 13.8 to 16.0. The Chinese, Kalmucks, Colorado Indians, Schingu Indians, and Brazilian Indians according to Martin (12) have practically the same index as we have found for the Quichua. Foot length relative to stature does not seem to be a character of value in differentiating the races, but in general the foot length varies with the stature.

In the mixed Quichua the supramalleolar circumference (greatest) shows an average of 335, with a maximum of 371, a minimum of 270, and a variation of 101. In the pure the average is 341, the extremes 405 and 287, and the range of variation 118. The average supramalleolar circumference (least) in the mixed is 211, the greatest 242, the least 165, and the variation 77. In the pure the average is 214, the greatest 245, the least 190, and the range of

variation 55. These average leg circumferences are both greater in the pure than they are in the mixed. The average leg circumference index $\left(\frac{\text{average supramalleolar circumference (least)} \times 100}{\text{average supramalleolar circumference (greatest)}}\right)$ for the mixed is 63.0 and for the pure 62.8. This index varies in the males of different races (Martin, 12) from 60.2 to 68.8. In the Colorado Indians this index is 61.4, quite similar to that of the Quichua. The largely developed upper part of the leg is a marked characteristic of the Quichua and is due to the strong development of the *triceps surae* muscle and not to the *panniculus adiposus*. This index is large in Negroes, Egyptians, and Australians, and smaller in Europeans and Mongolians. The relative greatest leg circumference

$$\left(\frac{\text{average supramalleolar circumference (greatest)} \times 100}{\text{average stature}}\right)$$

in the mixed Quichua is 21.1, in the pure 21.5. Martin (12) gives the racial variation in the male from 17.8 to 21.2, this last number for the Colorado Indian. This index likewise indicates the largely developed upper part of the leg of the Quichua. The same thing is further indicated by the greatest circumference of the leg relative to the length. This index is 79 in European males (Martin, 12) but in the mixed Quichua it is 93.8 and in the pure blood 96.6.

The seriation tables dealing with the measurements of the lower extremities (given in the appendix) show no significant differences between the pure blood and the mixed.

Comparison of Upper and Lower Extremities

The intermembral index $\left(\frac{\text{arm and forearm} \times 100}{\text{thigh and leg}}\right)$ in the mixed Quichua averages 76.8, with extremes of 83.0 and 71.0, and a variation of 12.0. In the pure the average is 77.4, with extremes of 86.9 and 68.7, and a variation of 18.2. In the determination of this index the thigh length is the difference between the sitting and kneeling height. The hand length and foot height are not included. A low index is quite characteristic of man as distinguished from the anthropoids, and the index decreases from birth.

This index when determined from the skeleton is somewhat smaller than when determined on the living by the method given above. Martin's (12) table of this index for the living male of the different races shows a variation from 67.1 to 74.4, the latter for the Brazilian Indian. In Europeans the index is 69.5. Martin does not state how the length of the lower extremity was determined, but probably a different method was employed than in the case of the Quichua. The Quichua evidently have long upper extremities relative to the lower extremities.

In the mixed Quichua, the arm-thigh index averages 84.9 with extremes of 100.4 and 72.3 and a variation of 28.1. In the pure the average is 81.5 with a maximum of 95.9, a minimum of 65.6, and a variation of 30.3. This index is somewhat higher than the femoro-humeral index obtained on the skeleton. Martin (12) gives the arm-thigh index for the European as 76.5. The method of estimating the thigh length, however, is not given, but undoubtedly a greater length for the thigh was obtained than by the method employed here for the Quichua. The short thigh length, obtained by our method of measurement accounts partly for the large arm-thigh indices obtained by us. No observations on the racial differences in this index in the living are known to the writer. The corresponding skeletal index (femoro-humeral) varies racially (Martin, 12) from 68.8 to 72.9.

The forearm-leg index $\left(\frac{\text{average forearm} \times 100}{\text{average leg}}\right)$ in the mixed Quichua is 72.2, in the pure 72.0. Martin (12) states that this index is 83.7 in the new born, and diminishes to 69.3 in the adult. No observations on the racial differences determined from the living are known to the writer. Martin (12) states that the corresponding skeletal index (radio-tibial) varies racially from 63.5 to 70.9.

The accompanying illustration, copied in part from Thompson (14), shows the body proportions of several races when reduced to the same height. The bitrochanteric breadth is represented only in the case of the Quichua. It should be noted also that in the Quichua the forearm was measured from the olecranon process.

The negro, when compared with the white man, has long upper and lower extremities, but a short trunk. The Australian shows still longer lower extremities and shorter trunk. The Quichua in comparison with the white man shows proportionately broader shoulders, longer upper extremities, and longer forearm and hand.

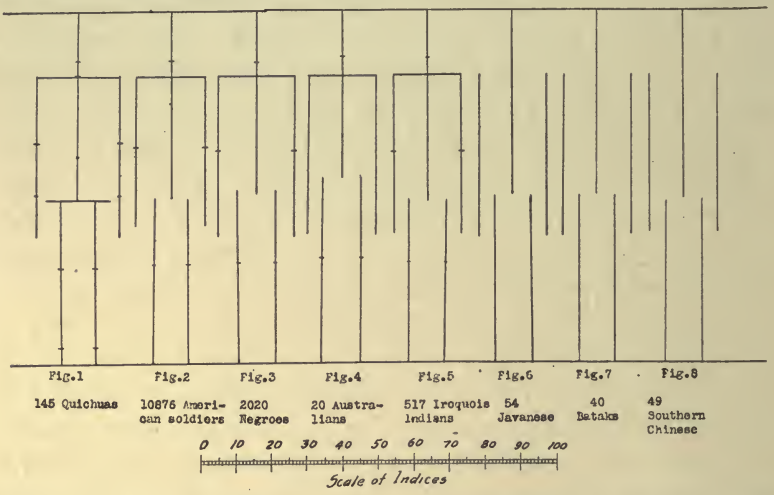

FIG. 3.—Graphic representation of the proportions of several races when reduced to the same height. Figures 2–8 from A. Thompson, p. 127.

In comparison with the negro the Quichua shows shorter lower extremities, broader shoulders, longer trunk, and longer forearm and hand. When compared with the Iroquois Indians, the Quichua exhibits proportionately broader shoulders, a shorter arm, and longer forearm and hand; in other respects the proportions are quite similar.

HEAD AND FACE

The horizontal circumference of the head was measured through the glabella and occipital point. The head length was measured from the glabella to the occipital point, the breadth was the greatest breadth and the height the vertical distance from the mid-point of the anterior margin of the tragus to the vertex. The binauricular breadth is the distance between the mid-pretragal points. The forehead breadth was not measured, but estimated as broad, narrow, or medium. The bizygomatic diameter is the greatest diameter from

zygion to zygion. The interocular breadth is the distance between the inner canthi, and the external biorbital breadth is the distance between the outer orbital margins. The biorbito-nasal arc is the distance from one outer orbital margin across the root of the nose to the opposite outer orbital margin.

In the mixed Quichua the head length averages 187 with a maximum of 200, a minimum of 169, and a range of variation of 31. In the pure Quichua the average length is 185 with a maximum of 201, a minimum of 172, and a range of variation of 29.

The head breadth in the mixed averages 146, with extremes of 155 and 130, and a range of variation of 25. In the pure the average is 148, with extremes of 160 and 139, and a variation of 21.

The head height in the mixed averages 130, with extremes of 148 and 103, and a range of 45. In the pure the average is 129, the greatest 146, the least 115, and the variation 31. The average horizontal circumference of the head in the mixed Quichua is 547 with extremes of 586 and 502, and a variation of 84. In the pure the average is 549, the greatest 587, the least 512, and the variation 75.

Chervin (2) obtained for the Quichua (♂) an average head length of 182, with extremes of 192 and 120, and a range of variation of 72; he found the average breadth to be 147, with extremes of 192 and 120, and a variation of 31. His results agree closely with ours with the exception of the head length. For the auriculo-bregmatic height, he obtained an average of 134, with a maximum of 169, a minimum of 119, and a range of variation of 50; a result slightly greater than ours. The head of the pure Quichua so far as the above results go tends to be a trifle shorter, broader, and lower than that of the mixed, but the horizontal circumference is greater. Chervin's (2) average head length for the Quichua is only slightly less than the results above, but the extremes, especially the minimum, are quite different. In the case of the head breadth, Chervin's (2) average is practically the same and the extremes and the range of variation only a little different. His average for head height is 5 mm. greater than ours and his range of variation is 50 mm. as compared with our 31 mm. Chervin did not determine

the circumference. The Quichua occupy an intermediate position among the races in respect to head circumference, head length and breadth, but are high in the list of head heights.

In the mixed Quichua, the average cephalic or breadth index is 78.5, the maximum 83.7, the minimum 70.6, and the variation range is 13.1. In the pure, the average is 79.9, with extremes of 90.2 and 73.1, and a variation of 17.1. Chervin finds in the Quichua (♂) a somewhat larger index (82), and a greater maximum (94.29) but practically the same minimum. The average breadth index of 79.9 places the Quichua in the mesocephalic group, but just below the brachycephalic. His breadth index is nearly the same as the Shoshoni and the Chiriguan Indians, the Asiatic Eskimo and the North Chinese.

The seriation table in the appendix shows that of the mixed Quichua 12.5 percent are dolichocephalic, 12.5 percent brachycephalic, and 75.0 mesocephalic, while of the pure Quichua 9.9 percent are dolichocephalic, 33.9 percent brachycephalic, and 56.2 percent mesocephalic. A distinctly greater percentage of the pure than of the mixed Quichua are therefore brachycephalic.

In this classification those with an index up to 75.9 are dolichocephalic, between 76 and 80.9 mesocephalic, and above 80 are brachycephalic. Chervin's (2) results show dolichocephalic 4 percent, mesocephalic 34.6 percent, and brachycephalic 61.3 percent. It should be noted, however, that his classification is somewhat different, since all with an index below 75 are dolichocephalic, between 75 and 79 mesocephalic, and above 80 brachycephalic. This, however, does not entirely explain the disparity of the two results. In our measurements 33.1 percent of the pure Quichua have head lengths from 179 to 185 and 55.4 percent have head breadths from 144 to 150, while Chervin finds 70 percent of head lengths and 65 percent of head breadths within the limits stated above.

The height (midtragal)-length index for the mixed Quichua shows an average of 69.5 with a maximum of 81.3, a minimum of 55.9, and a variation range of 25.4. In the pure the average is 68.6, with extremes of 80.8 and 61.1, and a variation range of 19.7. No marked differences are seen here between the mixed and the

pure. The mixed, however, show a slightly higher average index and a greater range of variation. Chervin's results show a higher average index (73) and a greater range of variation (29.03) than the above. His results, however, are based on only 75 cases, eight of which were females.

The seriation table shows that 2.4 percent of the pure Quichua are orthocephalic (58–62.9) and 97.6 percent hypsicephalic (63–x), while the mixed have 4.2 percent chamaecephalic (x–57.9) (one case) and 95.8 percent hypsicephalic. The Quichua has a height index practically the same as that given by Martin (12) for the Southern Chinese and distinctly less than the Eskimo (73.5) or the Colorado Indian (77.5). This index varies racially from 60.3 to 77.5 (Martin, 12).

The average height (midtragal)-breadth index of the mixed Quichua is 89.2 and of the pure 87.2. This is high in the list of indices, which vary racially from 75.3 to 97.5 (Martin, 12).

The binauricular breadth averages in the mixed 118, with extremes of 131 and 104, and a range of variation of 27. In the pure the average is 120, the extremes 135 and 106, and the variation 29. The binauricular breadth is considerably smaller than the greatest breadth (euryon to euryon) which averages 148 in the pure Quichua.

The bizygomatic breadth in the mixed gives an average of 132, a maximum of 147, a minimum of 123, and a range of variation of 24. In the pure the average is 141, with a maximum of 186(?) or 151, a minimum of 132, and a variation range of 54(?) or 19. The maximum of 186 is so great that it is probably incorrectly recorded and the photograph of this individual likewise indicates this. No average bizygomatic breadth greater than 155 is recorded by Martin (12). The average is notably greater in the pure than in the mixed and corresponds to that of the Japanese, South Chinese, and Eskimo. The reduction of this dimension in the mixed corresponds to what has been noted by other observers in the mixed European and Indian. Chervin finds that the average bizygomatic breadth in the Quichua is 138 with extremes of 155 and 108, and a variation of 47. This diameter he finds greater in the Aymara than in the Quichua, while the auriculo-bregmatic height is greater in the Quichua.

The bigonial breadth averages in the mixed 100, with extremes of 113 and 90, and a variation of 23. In the pure the average is somewhat greater (104), while the extremes are 119 and 93, and the range 26. Chervin (2) does not record this measurement. The Quichua is similar in this dimension to the Chiriguan and distinctly less than the Eskimo (131).

The interocular breadth is the distance between the inner canthi, and averages 35.0 in the mixed and 34.8 in the pure, with extremes for the mixed of 40 and 28, and for the pure of 42 and 28. This breadth varies racially from 31.5 to 39, and the Quichua and Eskimo are intermediate among the races in this respect.

In average external biorbital breadth the pure Quichua (88) surpasses the mixed (83). Also the pure (78 to 103) shows a greater range of variation than the mixed (82 to 91). This breadth is measured from the external margin of one orbit to a similar point on the opposite side.

The biorbito-nasal arc is measured from one external orbital margin over the more depressed part of the root of the nose to the similar opposite point. In the mixed the average is 99 with extremes of 108 and 89, giving a range variation of 19. In the pure the average is 101, with extremes of 117 and 88, and a variation of 29.

The seriation table in the appendix shows that a greater proportion of the pure than of the mixed have a large external biorbital breadth.

The naso-malar index $\left(\frac{\text{biorbito-nasal arc} \times 100}{\text{external biorbital breadth}}\right)$ in the mixed averages 114.4, with extremes of 121.3 and 107.2. In the pure the average is 114.7 with extremes of 126.1 and 105.2. This index indicates the degree of flattening of the upper portion of the face or the degree of projection of the nasal root in respect to the external orbital margins, and it is influenced by the projection and recession of both the nasal root and external orbital margin. The following percentages are obtained by the inspection of the seriation table of the naso-malar index given in the appendix. Of those given opposite 107 in the seriation table, all have indices less than 107.5 except one pure, whose index is 107.9.

Index		Quichua, Pure, Percent	Quichua, Mixed, Percent
(–107.4)	Platyopic.....	5.8	4.2
(107.5–109.9)	Mesopic.....	7.4	12.5
(110 –)	Prosopic.....	86.8	83.3

The Quichua is far removed from the Mongoloid type of naso-malar index, and the pure differ from the mixed mostly in having a smaller percentage mesopic and a larger percentage prosopic.

Chervin (2) did not determine this index for the Quichua.

The height of the face and head as determined by the vertical distance from the chin to the vertex averages in the mixed 221 with extremes of 246 and 196. In the pure the average is 223 with extremes of 248 and 194, showing only a slightly greater average height and range of variation than the mixed.

The distance from the nasion to the prosthion in the mixed Quichua averages 63 with extremes of 71 and 50. In the pure the average is 65 with extremes of 73 and 54, showing a slightly higher average and smaller range of variation than the mixed. This average varies racially from 52 to 91, so that the Quichua is one of the races with a short upper face.

The distance from the nasion to the chin, giving the total morphologic height of the face, averages in the mixed 117, with a maximum of 123 and a minimum of 92. In the pure the average is 116, with a maximum of 132 and a minimum of 101. The morphologic height of the face varies racially from 103 to 127. The Quichua in respect to face height stands a little above the average of the races and is a little less than that of the Shoshoni (119, Boas) and the Navajo (120, Hrdlička).

The (cephalometric) morphologic upper facial index

$$\left(\frac{\text{nasion to prosthion} \times 100}{\text{bizygomatic breadth}}\right)$$

averages in the mixed 46.1, with a maximum of 52.6 and a minimum of 39.6. In the pure the average is 45.9 with a maximum of 52.5 and a minimum of 34.4(?) or 39.4. This index varies racially from 49 to 55.5 when determined for the skull. No records of this index obtained from the living were available for comparison.

This index in the Quichua is undoubtedly low in comparison with other races. The minimum of 34.4(?) given above is probably incorrect, as it seems likely that the bizygomatic diameter (186) is incorrectly recorded, as has already been explained.

The (cephalometric) morphologic facial index

$$\left(\frac{\text{nasion to gnathion} \times 100}{\text{bizygomatic breadth}}\right)$$

averages in the mixed Quichua 82.8, with a maximum of 91.1 and a minimum of 73, giving 18.1 as the range of variation. In the pure the average is 82.9, with a maximum of 93.2, a minimum of 60.7(?) or 70.6, and a range of variation of 32.5(?) or 22.6. In subject number 5, the bizygomatic diameter is recorded as 186, but probably should be 136, giving a total facial index of 83.1 instead of 60.7, in which case 70.6 is the smallest index. The seriation table in the appendix shows a relatively greater number of cases of the mixed than of the pure Quichua with high total facial indices.

This index varies racially from 80 to 97.2 as recorded by various authors. The following table shows the classification of the Quichua according to this index:—

Index		Quichua, Mixed, Percent	Pure Blood, Percent
(–83.9)	Euryprosopic.....	50.0	55.4
(84–87.9)	Mesoprosopic.....	37.5	26.4
(88–92.9)	Leptoprosopic.....	12.5	17.4
(93–)	Hyperleptoprosopic ..	0.0	0.8

The average index (82.9) of the Quichua is quite similar to that of the North American Indians, as the Shoshoni (80.5 Boas). This index in the Quichua varies chiefly through the variation of the face height rather than the face breadth.

As it was impossible with the instruments at hand to determine the binauriculo-nasal and binauriculo-prosthionic radii, the distance from the tragus (midpoint of attached margin) to the prosthion and from the tragus to the nasion were obtained, thus making it possible, it was hoped, in the case of heads which showed no noticeable bilateral asymmetry, to obtain some idea of the gnathic projection.

In the mixed Quichua the average index based on the dimensions described above $\left(\frac{\text{trago-prosthionic line} \times 100}{\text{trago-nasionic line}}\right)$ is 99.1 with extremes of 107.7 and 92.1. In the pure the average index is 101.8, with extremes of 113.2 and 90.1. The pure Quichua exhibits, therefore, a somewhat greater average gnathic projection and variation range than the mixed. It is impossible to make any racial comparisons based on this index because of lack of data.

The average bizygomatic breadth-head breadth index

$$\left(\frac{\text{bizygomatic breadth} \times 100}{\text{head breadth}}\right)$$

in the mixed Quichua is 93.2, in the pure 94.2. The larger index in the pure is due principally to their greater bizygomatic breadth, as their head breadths are also actually greater. Both pure and mixed are cryptozygous.

The only reference to this index at hand is that of Boas (1) in the case of the Eskimo. He gives the Athapascan (Tahltan) as 94.8, Nunatagmiut Eskimo as 100.8, Koukpagmiut Eskimo as 102.7.

The gonio-zygomatic index $\left(\frac{\text{bigonial breadth} \times 100}{\text{bizygomatic breadth}}\right)$ in the mixed Quichua averages 73.5 with extremes of 81.5 and 66.1. In the pure the average is 73.5 with extremes of 81.9 and 55.3. This index in the skull varies racially from 65.7 to 87.5, and individually from 63 to 92. Duckworth (5) estimated this index for the Labrador Eskimo (♂) as 93.1. This index is low in the Quichua mainly because of the large bizygomatic breadth rather than because of the small bigonial breadth.

Cranial Capacity and Brain Weight

A number of methods have been devised for obtaining the cranial capacity and brain weight of the living. Probably the Lee-Pearson (11) formula is the most accurate method for obtaining the cranial capacity. It was calculated for German crania. The following is the formula:—

The cranial capacity in c.c. for males

$$= .000337(l - 11)(b - 11)(h - 11) + 406.01.$$

The height here is the height above the middle of the tragus.

Using the average head measurements for the mixed Quichua we obtain an average cranial capacity of 1,359 and multiplying by .87 (Manouvrier), a brain weight of 1,182 grams. In the pure we obtain 1,354 c.c. for the cranial capacity and 1,178 grams for the brain weight. The Quichua is therefore in the mesocephalic group (1350–1450).

If the brain weight of the pure Quichua is estimated from the stature in centimeters (158.4×7) we obtain 1,109 gm. and for the mixed 1,111 gm. By both methods of computation the brain weight of the mixed is slightly greater than that of the pure.

According to Gladstone's (8) method of determining the brain weight, the following formula is used:

$$W = \frac{L \times B \times H \text{ (auricular)}.}{2.806}$$

This holds true between twenty and forty-six years of age. This gives a brain weight, neglecting the factor of age, for the mixed Quichua of 1,265 grams, and for the pure blood of 1,259 grams. Davis has estimated the brain weight of the North American Indians as 1,265. The Negro brain averages 1,245, the brain of the white races 1,420.

No records of actual brain weight or body weight for the Quichua are known to the writer.

Summary

It is recognized that in making comparisons between the pure blood and the mixed Quichua that, on account of the small number of the latter examined (24), any conclusions must be considered only tentative.

The Quichua are of low stature, with broad shoulders. Relatively to the stature, the upper extremity, especially the forearm, is long and the lower extremity, especially the thigh, is short. The umbilicus is situated low in respect to the stature. The supramalleolar circumferences of the leg are large, especially the greater one which is correlated with a large *triceps surae* muscle, due to

living in a mountainous country. The muscular development of the arm and forearm is poor, as is shown by inspection and the low dynamometric records. The broad shoulders and large thoraces are probably correlated with carrying burdens on mountain trails and breathing rarified air. A thick *panniculus adiposus* is unusual in a pure blood Quichua, but is much more frequent in the mixed.

The areola of the iris in the pure is mostly medium maroon and the periphery greenish-yellow. These are both lighter in the mixed.

The skin color varies from a light to a dark brown in the pure Quichua and is distinctly lighter in the mixed.

The scalp hair is black, straight, and abundant and the hair on the face is small in amount in both pure and mixed Quichua, but is much more developed in the case of the mixed. There is a remarkable freedom from grayness and alopecia.

The third molars frequently erupt late or may be absent. Anomalies of the teeth are infrequent. Caries is much more prevalent in those living on or near sugar plantations and eating more sugar than in the others.

The Quichua is on the average mesocephalic and in very large proportion hypsicephalic, the head of the pure blood being a little shorter, broader, and slightly lower than is the case with the mixed, so that a larger percentage of the pure than of the mixed are brachycephalic and hypsicephalic, and a less percentage dolichocephalic.

The face is broad and short, and a larger percentage of the pure blood than of the mixed are euryprosopic. The facial index is similar to that of the North American Indian.

The lips are thick or medium; procheily predominates in the pure and orthocheily in the mixed. The labio-nasal furrow is generally well marked.

The Quichua is mesotic, the mixed in greater proportion than the pure. The ear, however, is broader in the pure as well as shorter. The physiognomic ear index is greater in the pure blood. Ear anomalies are infrequent.

The prevailing nose has a straight or sinuous dorsum, a root moderately prominent, and markedly divergent nostrils. The majority of cases are mesorrhine. There are no significant nasal

differences in the pure and mixed Quichua, although the nose of the pure Quichua is slightly higher, broader, and with a longer base than that of the mixed.

Naevi are of frequent occurrence. Of the one hundred and forty-five Quichua examined, 3.4 percent were infected with overo (mal de los pintos). These cases came from various localities.

In many of the body proportions and in some physiognomic characters the Quichua resemble certain North American Indians.

References

1. Boas, Franz. A. J. Stone's Measurements of Natives of the Northwest Territories. Bulletin of the American Museum of Natural History, vol. 14, pp. 53–68. New York, 1901.
2. Chervin, Dr. Arthur. Anthropologie Bolivienne, vol. 2. Paris, 1907.
3. Deniker, J. The Races of Man. London, 1900.
4. d'Orbigny, A. L'homme Americain. Paris, 1839.
5. Duckworth, W. L. H. An Account of Some Eskimos from Labrador. Studies in Anthropology. Cambridge, 1904.
6. Eberhardt, Charles C. Indians of Peru. Smithsonian Miscellaneous Collections, vol. 5, part 2. 1909.
7. Forbes, David. On the Aymara Indians of Bolivia and Peru. The Journal of the Ethnological Society of London, N.S., vol. 2, pp. 193–205. London, 1870.
8. Gladstone, J. R. A Study of the Relations of the Brain to the Size of the Head. Biometrika, vol. 4, p. 105. 1906.
9. Hrdlička, Dr. A. Address before Washington Anthropological Society, Secretary's report. Science, N.S. vol. 38, p. 752. 1913.
10. Johnson, M. M. A Study in Surface Anatomy with Special Reference to the Position of the Umbilicus. The Anatomical Record, vol. 5, pp. 461–470. 1911.
11. Lee, Dr. A. Philosophical Transactions, A, vol. 196, pp. 225–264. 1901.
12. Martin, R. Lehrbuch der Anthropologie. Jena, 1914.
13. Squier, E. G. Peru: Incidents of Travel and Exploration in the Land of the Incas. New York, 1877.
14. Thompson, A. On the Treatment and Utilization of Anthropological Data. Knowledge, pp. 125–128. London, June 1, 1899.
15. Weisbach, Dr A. Reise der Novara. Wien, 1875.

APPENDIX.

	1	2	3	4	5	6	7
1. PURE OR MIXED Quichua	Pure	Pure	Pure	Pure	Pure	Pure	Pure
2. Locality	Calca	Pomacanchi	Paucartambo	Acomayo	Oropeza	Chincheros	Acomayo
3. Age	60	19	50	25	19	45	17
4. Sex	M	M	M	M	M	M	M
5. Height—Total	1,564	1,554	1,588	1,548	1,606	1,644	1,591
6. To chin	1,313	1,342	1,349	1,312	1,393	1,416	1,373
7. To presternal notch	1,255	1,278	1,306	1,249	1,321	1,322	1,315
8. To acromion	1,290	1,272	1,283	1,248	1,349	1,347	1,338
9. Sitting	802	804	814	819	856	861	811
10. Kneeling	1,182	1,166	1,195	1,149	1,216	1,236	1,226
11. To knee	424	413	446	432	428	442	428
12. To internal malleolus	85	68	77	79	79	87	72
13. To umbilicus	914	926	916	921	972	964	974
14. Biacromial breadth	386	353	369	379	357	372	339
15. Bitrochanteric breadth	309	280	312	302	310	288	308
16. Upper extremities—Span	1,628	1,565	1,595	1,608	1,604	1,639	1,647
17. Length of arm	292	302	294	273	293	299	304
18. Length of forearm and hand	440	410	454	431	433	424	438
19. Length of forearm	249	234	267	258	255	250	255
20. Length of hand	191	176	187	173	178	174	183
21. Length of arm and forearm	541	536	561	531	548	549	559
22. Forearm-arm index	85.3	77.4	90.8	94.5	87.0	83.6	83.7
23. Hand-stature index	12.2	11.3	11.7	11.1	11.0	10.5	11.5
24. Lower extremities—Length of thigh	380	362	381	330	360	375	415
25. Length of leg	339	345	369	353	349	355	356
26. Length of thigh and leg	719	707	750	683	709	730	771
27. Length of foot	241	237	251	245	249	247	241
28. Supramalleolar circum. (greatest)	354	321	318	352	331	358	314
29. Supramalleolar circum. (least)	233	217	216	238	219	223	205
30. Leg-thigh index	89.2	95.3	96.8	107.0	96.9	94.6	85.7
31. Intermembral index	75.2	75.8	74.8	77.7	77.3	75.2	72.5
32. Foot-stature index	15.4	15.3	15.7	15.7	15.5	15.0	15.0
33. Head—Length	187	184	184	173	186	197	185
34. Breadth	145	149	153	154	145	144	152
35. Height	119	128	136	138	128	138	128
36. Circumference	554	539	562	543	538	571	545
37. Breadth index	77.5	80.9	83.1	89.0	77.9	73.1	82.1
38. Height index	63.6	69.5	73.9	79.8	68.8	70.0	69.1
39. Binauricular breadth	124	131	135	130	119	117	116
40. Bizygomatic breadth	146	138	143	142	186	135	138
41. Bigonial breadth	115	103	111	107	103	108	106
42. Interocular breadth	35	35	33	31	30	34	32
43. External biorbital breadth	96	94	89	89	90	89	88
44. Biorbito-nasal arc	101	101	103	101	102	103	108
45. Vertex to chin	247	217	239	242	232	238	228
46. Nasion to prosthion	67	64	67	66	64	67	64
47. Nasion to chin	127	114	112	119	113	124	116
48. Upper facial index	45.8	46.3	46.8	46.4	34.4	49.6	46.4
49. Total facial index	86.9	82.6	78.3	83.8	60.7	91.8	84.0
50. Nose—Height	53	39	51	48	46	44	45
51. Breadth	39	40	43	38	37	38	39
52. Base	38	33	36	34	30	34	35
53. Nasal index	73.5	102.5	84.3	79.1	80.4	86.3	86.6
54. Ear—Length	72	57	65	60	50	63	63
55. Breadth	37	37	39	32	30	36	36
56. Physiognomic ear index	51.3	64.9	60.0	53.3	60.0	57.1	57.1
57. Auriculo-nasal line	113	104	111	106	103	107	107
58. Auriculo-prosthionic line	116	112	113	111	107	111	108
59. Gnathic index	102.6	107.7	101.8	104.7	103.8	103.7	100.9
60. Arm-thigh index	76.8	83.4	77.2	82.7	81.4	70.7	73.3
61. Span-stature index	104.0	100.7	100.4	103.8	99.9	99.7	103.5
62. Height sitting-stature index	51.2	51.7	51.2	52.9	53.3	52.4	50.9
63. Upper extremity-stature index	46.8	45.8	47.1	45.5	45.2	43.9	46.6
64. Lower extremity-stature index	48.8	48.2	48.7	47.1	46.7	47.6	49.0
65. Shoulder width-stature index	24.6	22.7	23.2	24.4	22.2	22.6	21.3
66. Gonio-zygomatic index	78.8	74.6	77.6	75.3	55.3	80.0	76.8
67. Bizygomatic width-head width index	100.7	92.6	93.4	92.2	128.2	93.7	90.8
68. Hip width-shoulder width index	80.0	79.3	84.5	79.8	86.8	77.4	90.9
69. Naso-malar index	105.2	107.4	115.7	113.5	113.3	115.7	122.7

8	9	10	11	12	13	14	15	16	17	18	19	20	21
Pure Paucar-tambo	Pure Anta	Pure Pisac	Pure Anta	Pure Taray	Pure Sicuani	Pure Anta	Pure Huaro-condo	Pure Coya	Pure Anta	Pure Chin-cheros	Pure Acom-ayo	Pure Pisac	Pure Zurite
27	37	22	19	28	39	22	30	28	20	20	50	80	27
M	M	M	M	M	M	M	M	M	M	M	M	M	M
1,552	1,556	1,514	1,560	1,556	1,624	1,542	1,682	1,699	1,551	1,631	1,659	1,560	1,574
1,297	1,337	1,282	1,334	1,326	1,406	1,322	1,435	1,479	1,328	1,421	1,435	1,342	1,353
1,245	1,248	1,234	1,274	1,266	1,324	1,260	1,366	1,383	1,264	1,336	1,365	1,282	1,285
1,271	1,261	1,236	1,253	1,246	1,338	1,248	1,363	1,411	1,271	1,334	1,352	1,297	1,263
752	842	804	806	798	856	838	858	881	792	818	870	815	856
1,144	1,182	1,173	1,195	1,168	1,236	1,184	1,260	1,296	1,161	1,218	1,251	1,206	1,189
413	414	406	425	430	454	406	472	458	423	462	465	414	413
76	78	72	72	72	76	69	83	78	72	72	83	75	74
907	881	865	924	943	968	882	1,020	1,002	932	999	983	901	908
381	389	355	371	367	388	359	391	399	361	394	414	398	384
304	298	299	288	293	292	290	320	336	291	323	312	325	312
1,554	1,564	1,598	1,556	1,629	1,674	1,531	1,742	1,716	1,575	1,713	1,719	1,629	1,625
308	258	291	280	277	308	269	318	319	290	310	304	301	284
425	415	406	404	446	443	405	474	455	422	453	458	406	430
244	247	242	239	274	270	246	293	269	250	275	264	236	261
181	168	164	165	172	173	159	181	186	172	178	194	170	169
552	505	533	519	551	578	515	611	588	540	585	568	537	545
79.2	95.7	83.1	85.3	98.9	87.6	91.4	92.1	84.3	86.2	88.7	86.8	78.4	91.9
11.6	10.8	10.8	10.5	11.0	10.6	10.3	10.7	10.9	11.0	10.9	11.6	10.9	10.7
392	340	369	389	370	380	346	402	415	369	400	381	391	333
337	336	334	353	358	378	337	389	380	351	390	382	339	339
729	676	703	742	728	758	683	791	795	720	790	763	730	672
240	239	227	242	248	250	237	274	260	231	259	250	239	243
335	349	345	328	320	356	353	357	369	319	352	358	371	342
207	223	216	226	214	213	215	238	246	208	230	222	225	217
85.9	98.8	90.5	90.7	96.7	99.4	97.4	96.7	91.5	95.1	97.5	100.2	86.7	101.7
75.7	74.7	75.8	69.9	75.7	76.2	75.4	77.2	73.9	75.0	74.0	74.4	73.6	81.1
15.4	15.3	15.0	15.5	15.9	15.3	15.3	16.2	15.3	14.8	15.8	15.1	15.3	15.4
194	182	178	188	190	193	193	193	195	186	186	193	186	187
146	151	155	152	151	159	151	147	148	143	145	147	151	145
135	130	118	124	124	123	138	137	135	118	127	139	133	127
575	549	554	556	574	565	571	563	586	543	547	568	579	545
75.3	83.0	87.0	80.8	79.4	82.4	78.2	76.1	75.9	76.9	77.9	76.2	81.2	77.5
69.5	71.4	66.2	65.9	65.2	63.7	71.4	70.9	69.2	63.4	68.2	72.0	71.5	67.9
114	126	123	129	114	131	122	123	118	114	120	126	130	123
140	143	140	140	138	149	147	141	137	132	135	142	146	144
100	108	100	103	98	119	109	106	109	95	98	112	105	100
31	33	38	37	31	37	37	37	37	32	36	41	38	38
89	92	87	94	88	88	93	94	94	84	87	94	88	94
99	104	102	99	98	100	111	108	105	96	101	99	96	108
229	227	227	211	214	232	228	229	216	211	211	227	209	213
67	65	69	60	65	66	65	72	68	63	55	72	69	66
120	116	127	110	114	123	119	130	126	116	102	126	129	118
47.8	45.4	49.2	42.8	47.1	44.3	44.2	51.0	49.6	47.7	40.7	50.7	47.2	45.8
85.7	81.1	90.7	78.5	82.6	82.5	80.9	92.1	91.9	87.9	75.5	88.7	88.3	81.9
47	45	45	41	44	46	48	48	47	44	41	48	49	44
37	43	37	41	41	38	38	38	39	41	38	40	39	41
35	35	36	33	34	36	35	36	34	36	33	38	35	37
78.7	95.5	82.2	100.0	93.2	82.6	79.3	79.1	83.0	93.2	92.7	83.3	79.6	93.2
64	59	51	61	60	58	60	65	60	58	57	63	53	61
37	34	44	35	37	38	39	35	37	38	37	35	41	57
57.8	57.6	86.3	57.4	61.7	65.5	65.0	53.8	61.7	51.7	64.9	55.5	77.3	93.4
105	109	105	103	104	111	111	115	109	99	104	107	110	108
109	110	108	102	107	110	111	119	111	102	106	105	110	107
103.8	100.9	102.8	99.0	102.8	99.1	100.0	103.4	101.8	103.0	101.9	98.1	100.0	99.1
78.6	75.8	78.8	71.9	74.8	81.1	77.7	79.1	76.8	78.5	77.5	79.8	76.9	85.3
100.1	100.5	105.5	99.7	104.6	103.0	99.2	103.6	101.0	101.5	105.0	103.5	104.4	103.2
48.4	54.1	53.1	51.7	51.2	52.7	54.3	50.9	51.9	51.0	50.1	52.4	52.2	54.3
47.2	43.2	46.0	43.8	46.4	46.2	43.7	47.1	45.5	45.9	46.7	45.9	45.3	45.4
51.5	45.9	46.9	48.3	48.7	47.3	45.7	49.0	48.1	48.9	49.8	47.6	47.8	45.6
24.4	25.0	23.4	23.7	23.5	23.8	23.2	23.2	23.4	23.3	24.1	24.9	25.5	24.3
71.4	75.5	71.4	73.5	71.0	79.8	74.1	75.1	79.5	71.9	72.5	78.8	71.9	69.4
95.8	94.6	90.3	92.1	91.3	93.7	97.3	95.9	92.5	92.3	93.1	96.6	96.7	99.3
79.8	76.6	84.2	77.6	79.8	75.3	80.8	81.8	84.2	80.6	81.9	75.3	81.7	81.2
111.3	113.0	117.2	105.3	111.4	113.6	119.4	114.9	111.7	114.3	116.1	105.3	109.1	114.9

	22	23	24	25	26	27	28
1. PURE or MIXED Quichua	Pure	Pure	Pure	Pure	Pure	Pure	Pure
2. Locality	Calca	Ocongate	Sicuani	Anta	Yanaoca	Lamay	Querumarca
3. Age	40	50	18	30	38	32	27
4. Sex	M	M	M	M	M	M	M
5. Height—Total	1,564	1,659	1,545	1,578	1,545	1,584	1,621
6. To chin	1,353	1,415	1,325	1,334	1,313	1,352	1,401
7. To presternal notch	1,271	1,356	1,261	1,286	1,252	1,285	1,346
8. To acromion	1,266	1,336	1,258	1,282	1,245	1,278	1,332
9. Sitting	832	870	798	797	776	802	858
10. Kneeling	1,201	1,243	1,132	1,188	1,173	1,191	1,226
11. To knee	408	450	436	428	396	436	430
12. To internal malleolus	79	75	58	76	75	83	78
13. To umbilicus	900	987	938	911	897	944	937
14. Biacromial breadth	366	382	331	393	390	379	402
15. Bitrochanteric breadth	321	320	279	306	315	276	305
16. Upper Extremities—Span	1,548	1,754	1,558	1,680	1,590	1,660	1,648
17. Length of arm	269	321	284	291	286	297	299
18. Length of forearm and hand	417	467	410	444	412	433	433
19. Length of forearm	253	286	248	268	249	260	259
20. Length of hand	164	181	162	176	163	173	174
21. Length of arm and forearm	522	607	532	559	535	557	558
22. Forearm-arm index	94.0	89.0	87.3	92.0	87.0	87.5	86.6
23. Hand-stature index	10.4	10.9	10.4	11.1	10.4	10.8	10.7
24. Lower Extremities—Length of thigh	369	373	334	391	397	389	368
25. Length of leg	329	375	378	352	321	353	352
26. Length of thigh and leg	698	748	712	743	718	742	720
27. Length of foot	231	253	241	242	240	237	239
28. Supramalleolar circum. (greatest)	363	358	288	336	334	310	328
29. Supramalleolar circum. (least)	216	229	206	212	212	198	209
30. Leg-thigh index	89.2	100.5	113.2	90.0	80.9	90.7	95.6
31. Intermembral index	74.8	81.2	74.7	75.2	74.5	75.0	77.5
32. Foot-stature index	14.9	15.2	15.5	15.3	15.4	14.8	14.7
33. Head—Length	187	192	176	192	186	175	188
34. Breadth	152	157	156	149	149	158	145
35. Height	131	125	123	128	136	141	128
36. Circumference	566	569	533	556	563	553	549
37. Breadth index	81.3	81.8	88.6	77.6	80.1	90.2	77.1
38. Height index	70.0	65.1	69.8	66.6	73.1	80.5	68.0
39. Binauricular breadth	123	129	118	126	116	116	122
40. Bizygomatic breadth	146	149	140	140	144	142	144
41. Bigonial breadth	102	98	106	98	101	97	104
42. Interocular breadth	39	34	33	38	36	35	41
43. External biorbital breadth	97	88	88	90	94	88	103
44. Biorbito-nasal arc	117	101	95	101	107	108	112
45. Vertex to chin	197	219	198	213	223	218	213
46. Nasion to prosthion	62	70	62	61	69	73	66
47. Nasion to chin	109	120	111	119	123	129	120
48. Upper facial index	42.4	46.9	44.3	43.5	47.9	51.4	45.8
49. Total facial index	74.6	80.5	79.2	85.0	85.4	90.9	83.3
50. Nose—Height	47	52	43	48	48	52	42
51. Breadth	43	34	33	41	40	38	38
52. Base	38	36	32	34	37	38	32
53. Nasal index	91.5	65.4	76.7	85.4	83.3	73.1	90.4
54. Ear—Length	63	55	58	58	65	64	62
55. Breadth	38	39	35	38	39	33	32
56. Physiognomic ear index	60.3	70.9	60.3	65.5	60.0	51.6	51.6
57. Auriculo-nasal line	111	110	98	108	108	106	107
58. Auriculo-prosthionic line	111	109	99	115	108	107	114
59. Gnathic index	100.0	99.1	101.0	106.4	100.0	100.9	106.5
60. Arm-thigh index	72.9	86.0	85.0	74.4	72.0	76.4	81.2
61. Span-stature index	99.0	105.7	100.8	106.4	102.9	104.8	101.7
62. Height sitting-stature index	53.1	52.4	51.6	50.5	50.2	50.6	52.9
63. Upper extremity-stature index	43.8	47.5	44.9	46.5	45.1	46.0	45.1
64. Lower extremity-stature index	46.8	47.6	48.1	49.5	49.5	49.7	47.1
65. Shoulder width-stature index	23.4	23.0	21.4	24.9	25.2	23.9	24.7
66. Gonio-zygomatic index	69.8	65.7	75.7	70.0	70.1	68.3	72.2
67. Bizygomatic width-head width index	96.0	94.9	89.7	93.9	96.6	89.8	99.3
68. Hip width-shoulder width index	87.7	83.8	84.3	77.9	80.8	72.8	75.9
69. Naso-malar index	120.6	114.8	107.9	112.2	113.8	122.7	108.7

29	30	31	32	33	34	35	36	37	38	39	40
Pure San Pablo de Cacha	Pure Anta	Pure Oropeza	Pure Saylla	Pure Calca	Pure Calca	Pure Chincheros	Pure Cusibamba	Pure Quispicanchi	Pure Quispicanchi	Pure Tungasuca	Pure Palca
30	60	55	27	80	28	30	32	28	40	62	48
M	M	M	M	M	M	M	M	M	M	M	M
1,573	1,609	1,618	1,598	1,511	1,536	1,512	1,527	1,675	1,576	1,656	1,640
1,360	1,387	1,372	1,346	1,299	1,320	1,296	1,309	1,435	1,318	1,416	1,410
1,264	1,334	1,315	1,272	1,229	1,256	1,259	1,259	1,349	1,254	1,361	1,331
1,274	1,301	1,319	1,272	1,213	1,216	1,235	1,220	1,355	1,268	1,346	1,308
835	812	802	839	783	811	816	827	843	843	833	878
1,212	1,200	1,201	1,181	1,149	1,165	1,147	1,154	1,253	1,180	1,242	1,239
420	454	439	445	415	423	398	403	461	419	436	418
74	66	83	83	72	72	81	78	83	75	70	79
914	984	954	943	869	885	900	904	970	919	996	987
395	401	401	406	389	356	376	385	399	387	394	370
291	318	326	304	300	284	305	307	312	308	322	306
1,585	1,669	1,719	1,644	1,595	1,559	1,577	1,554	1,699	1,593	1,705	1,627
281	297	316	282	289	278	283	275	299	288	312	301
419	440	451	434	415	407	419	408	460	425	451	420
260	267	267	262	251	243	250	249	271	253	274	262
159	173	184	172	164	164	169	159	189	172	177	158
541	564	583	544	540	521	533	524	570	541	586	563
92.5	89.9	84.5	92.9	86.8	87.4	88.3	90.5	90.6	87.8	87.8	87.0
10.1	10.7	11.3	10.7	10.8	10.6	11.1	10.4	11.2	10.9	10.6	9.6
377	388	399	342	366	354	331	327	410	337	409	361
346	388	356	362	343	351	317	325	378	344	366	339
723	776	755	704	709	705	648	652	788	681	775	700
235	254	245	250	222	240	236	225	264	245	251	232
332	318	341	366	316	300	358	335	359	334	356	361
215	206	217	229	200	191	227	213	232	206	219	225
91.7	100.0	89.2	105.9	93.7	99.1	95.7	99.3	92.2	102.0	89.4	93.9
74.8	72.6	77.2	77.2	76.1	73.9	82.2	80.3	72.3	79.4	75.7	80.4
14.9	15.7	15.1	15.6	14.6	15.6	15.6	14.7	15.7	15.5	15.1	14.1
184	185	201	191	188	184	186	190	192	190	185	196
149	152	149	153	148	139	146	147	148	150	147	147
122	128	132	140	119	120	126	119	146	134	134	131
548	551	587	568	555	539	553	555	572	565	556	566
80.9	82.1	74.1	80.1	78.7	75.5	78.5	77.3	77.1	78.9	79.4	75.0
66.3	69.1	65.6	73.2	63.2	65.2	67.7	62.6	76.0	70.5	72.4	66.8
121	135	123	125	119	107	119	119	118	127	119	122
141	147	143	145	144	133	139	136	145	140	140	138
101	108	112	112	93	98	104	102	106	101	107	107
32	38	39	36	34	33	36	33	34	35	36	36
87	90	92	90	87	84	85	86	93	87	90	88
105	102	109	102	99	90	98	104	109	98	106	100
234	222	230	243	201	216	212	225	237	235	230	235
70	63	68	58	68	67	64	67	70	63	70	69
120	113	122	113	121	124	117	126	127	120	122	124
49.6	42.8	47.5	40.0	47.2	50.3	46.0	49.3	48.3	45.0	50.0	50.0
85.1	76.8	85.3	77.9	84.0	93.2	84.1	92.6	87.5	85.7	87.1	89.8
48	43	50	44	51	46	49	48	45	47	45	50
39	38	43	37	41	32	35	37	42	38	38	38
36	33	57(?)	36	37	31	—	34	37	36	34	35
81.2	88.3	86.0	84.1	80.4	69.5	71.4	77.1	93.3	80.9	84.4	76.0
61	64	63	63	65	57	59	56	61	65	68	58
38	41	40	38	41	33	34	35	38	35	38	38
62.3	64.1	63.5	60.3	63.0	57.9	57.6	62.5	62.3	53.8	55.9	65.5
106	112	109	105	105	102	106	108	109	107	105	110
113	111	111	109	108	111	106	112	111	116	115	120
106.6	99.1	101.8	103.8	102.8	108.8	100.0	103.7	101.8	108.4	109.5	109.1
74.5	76.5	79.2	82.4	78.9	78.5	85.5	84.1	72.9	85.4	78.4	83.3
100.7	103.7	106.2	102.9	105.5	101.5	104.3	101.8	101.4	101.1	102.9	99.2
53.0	50.4	49.8	52.5	51.8	52.8	53.9	54.1	50.3	53.3	50.3	53.5
44.5	45.8	47.4	44.7	46.5	44.6	46.4	44.7	45.3	45.2	46.1	43.9
47.1	49.5	50.4	47.5	48.2	47.2	46.0	46.0	49.6	46.2	49.6	46.5
25.1	24.8	24.8	25.4	25.7	23.1	24.9	25.2	23.8	24.5	23.7	22.5
71.6	73.4	78.3	77.2	64.5	73.6	74.8	75.0	73.1	72.1	76.4	77.5
94.6	96.7	95.9	94.7	97.3	95.6	95.2	92.5	97.9	93.3	95.2	93.8
73.9	79.3	81.3	74.8	77.1	79.7	81.1	79.7	78.2	79.6	81.7	82.7
120.7	113.3	118.5	113.3	113.8	107.1	115.3	120.9	117.2	112.7	117.7	113.6

	41	42	43	44	45	46	47
1. PURE or MIXED Quichua	Pure	Pure	Pure	Pure	Pure	Pure	Pure
2. Locality	Huaypo	Paucar-tambo	Apcor-quilla	Churo	Poma-canchi	Anta	Yana-oca
3. Age	18	88	27		40	32	40
4. Sex	M	M	M	M	M	M	M
5. Height—Total	1,422	1,547	1,606	1,488	1,672	1,633	1,610
6. To chin	1,227	1,329	1,384	1,254	1,426	1,392	1,392
7. To presternal notch	1,173	1,266	1,315	1,216	1,368	1,336	1,315
8. To acromion	1,181	1,257	1,323	1,215	1,360	1,356	1,316
9. Sitting	725	788	842	815	869	841	844
10. Kneeling	1,069	1,160	1,201	1,161	1,279	1,219	1,232
11. To knee	399	414	436	393	460	440	421
12. To internal malleolus	62	76	70	76	79	73	72
13. To umbilicus	854	919	949	868	976	988	937
14. Biacromial breadth	333	375	381	374	403	407	404
15. Bitrochanteric breadth	272	320	309	301	312	303	306
16. Upper Extremities—Span	1,467	1,648	1,648	1,513	1,707	1,697	1,727
17. Length of arm	268	304	305	291	286	303	303
18. Length of forearm and hand	381	436	430	398	460	447	463
19. Length of forearm	225	258	258	241	275	263	279
20. Length of hand	156	178	172	157	185	184	184
21. Length of arm and forearm	493	562	563	532	561	566	582
22. Forearm-arm index	83.9	84.9	84.5	82.8	96.1	86.8	92.0
23. Hand-stature index	10.9	11.5	10.7	10.5	11.0	11.2	11.4
24. Lower Extremities—Length of thigh	344	372	359	346	410	378	388
25. Length of leg	337	338	366	317	381	367	349
26. Length of thigh and leg	681	710	725	663	791	745	737
27. Length of foot	228	241	243	226	256	250	252
28. Supramalleolar circum. (greatest)	287	325	339	356	381	350	340
29. Supramalleolar circum. (least)	196	205	199	222	230	223	220
30. Leg-thigh index	97.9	90.8	101.9	91.6	92.9	97.0	89.9
31. Intermembral index	72.3	79.1	77.6	80.2	70.9	75.9	78.9
32. Foot-stature index	16.0	15.5	15.1	15.1	15.3	15.4	15.6
33. Head—Length	181	184	177	183	194	181	193
34. Breadth	151	145	148	150	154	147	153
35. Height	124	118	126	125	134	134	141
36. Circumference	539	545	535	550	570	545	586
37. Breadth index	83.4	78.8	83.6	81.9	79.4	81.2	79.2
38. Height index	68.4	64.1	71.1	68.3	69.0	74.0	73.0
39. Binauricular breadth	110	124	121	119	130	115	126
40. Bizygomatic breadth	133	140	142	136	142	143	145
41. Bigonial breadth	99	105	103	98	112	102	112
42. Interocular breadth	36	38	31	28	33	40	38
43. External biorbital breadth	88	82	82	82	84	92	92
44. Biorbito-nasal arc	105	92	93	101	100	111	109
45. Vertex to chin	194	225	211	225	242	240	226
46. Nasion to prosthion	62	62	67	69	69	70	65
47. Nasion to chin	110	117	114	120	132	130	127
48. Upper facial index	46.6	44.2	47.1	50.7	48.5	48.9	44.8
49. Total facial index	82.7	83.5	80.2	88.2	92.9	90.9	87.6
50. Nose—Height	45	46	46	45	46	51	49
51. Breadth	38	37	32	40	42	37	39
52. Base	34	37	33	37	39	36	37
53. Nasal index	84.4	80.4	69.5	88.9	91.3	72.5	79.5
54. Ear—Length	58	62	55	58	62	54	67
55. Breadth	38	41	37	34	40	36	38
56. Physiognomic ear index	65.5	66.1	67.3	58.6	64.5	66.7	56.7
57. Auriculo-nasal line	101	103	108	104	106	104	109
58. Auriculo-prosthionic line	102	109	106	108	120	106	111
59. Gnathic index	101.0	105.8	98.1	103.8	113.2	101.9	101.8
60. Arm-thigh index	77.9	81.7	84.9	84.1	69.8	80.1	78.1
61. Span-stature index	103.1	106.5	102.5	101.7	102.1	103.9	107.3
62. Height sitting-stature index	50.9	50.9	52.4	54.8	51.9	51.5	52.4
63. Upper extremity-stature index	45.6	47.7	45.7	46.3	44.6	45.9	47.5
64. Lower extremity-stature index	49.0	49.1	47.6	45.2	48.0	48.5	47.6
65. Shoulder width-stature index	23.4	24.3	23.7	25.1	24.1	24.9	25.1
66. Gonio-zygomatic index	74.4	75.0	72.5	72.1	78.8	71.3	77.2
67. Bizygomatic width-head width index	88.1	96.5	95.9	90.6	92.2	97.2	94.7
68. Hip width-shoulder width index	81.6	85.3	81.1	80.4	77.4	74.4	75.7
69. Naso-malar index	119.3	112.2	113.4	123.2	119.0	120.6	118.5

48	49	50	51	52	53	54	55	56	57	58	59	60
Pure Chita-pampa	Pure Acos	Pure Paucar-tambo	Pure Huaro-condo	Pure Huaypo	Pure Zurite	Pure Laura-marca	Pure Taray	Pure Mash-uay	Pure Anta	Pure Orope-za	Pure Ccatcca	Pure Anta
46	27	30	42	28	19	58	48	35	32	42	52	40
M	M	M	M	M	M	M	M	M	M	M	M	M
1,596	1,621	1,555	1,598	1,568	1,555	1,632	1,602	1,570	1,635	1,555	1,625	1,672
1,369	1,388	1,324	1,369	1,354	1,328	1,409	1,385	1,348	1,406	1,349	1,413	1,450
1,296	1,296	1,285	1,294	1,280	1,275	1,305	1,288	1,289	1,329	1,270	1,342	1,360
1,273	1,304	1,289	1,278	1,270	1,275	1,353	1,321	1,261	1,315	1,260	1,299	1,378
849	835	800	829	834	788	871	822	839	840	806	838	862
1,215	1,228	1,178	1,201	1,191	1,156	1,226	1,202	1,196	1,240	1,195	1,236	1,259
408	435	412	442	409	421	428	431	418	446	409	432	457
73	82	74	72	78	70	73	75	68	73	75	83	81
890	945	909	955	921	942	965	958	930	970	899	920	1,008
396	384	369	390	394	349	382	379	395	398	395	414	379
304	308	297	290	304	291	325	319	306	310	314	326	305
,594	1,595	1,600	1,638	1,601	1,569	1,677	1,666	1,618	1,695	1,608	1,660	1,710
1 306	284	293	295	291	284	302	305	290	310	290	300	337
409	423	420	442	421	416	442	445	412	451	—	431	452
243	248	252	262	245	248	264	270	244	273	—	253	264
166	175	168	180	176	168	178	175	168	178	166	178	188
549	532	545	557	536	532	566	575	534	583	—	553	601
79.4	87.3	86.0	88.8	84.2	87.3	87.4	88.5	84.1	88.0	—	84.3	78.3
10.4	10.8	10.8	11.2	11.2	10.8	10.9	10.9	10.6	10.8	10.6	10.9	11.2
366	393	378	372	357	368	355	380	357	400	389	398	397
335	353	338	370	331	351	355	356	350	373	334	349	376
701	746	716	742	688	719	710	736	707	773	723	747	773
235	248	236	248	242	237	247	248	240	248	—	254	253
330	342	321	344	362	319	330	355	347	336	310	345	362
202	214	210	208	213	198	209	216	210	216	199	221	222
91.2	89.8	89.4	99.4	92.7	95.2	100.0	93.6	98.0	93.2	85.8	87.6	94.7
78.3	71.3	76.1	75.0	77.9	74.0	79.7	78.1	75.5	75.4	—	74.0	77.7
14.7	15.2	15.2	15.5	15.5	15.3	15.1	15.4	15.2	15.1	—	15.5	15.1
185	180	182	185	191	184	195	187	177	187	184	187	194
150	149	147	147	150	145	153	151	157	144	154	153	152
137	133	124	128	140	127	136	131	135	133	132	132	135
561	550	545	544	565	547	563	561	542	543	549	568	567
81.1	82.7	80.7	79.4	78.5	78.8	78.4	80.7	88.7	77.0	83.7	81.8	78.3
74.1	73.8	68.1	69.1	73.2	69.0	69.7	70.0	76.2	71.1	71.7	70.5	69.5
121	122	110	120	123	116	120	122	120	118	120	120	122
142	140	136	139	142	137	141	140	140	137	147	139	144
109	110	104	105	103	104	101	111	106	111	103	96	101
34	31	33	30	35	34	39	32	34	33	38	35	36
83	83	88	82	87	87	88	86	83	87	82	84	90
91	95	111	91	102	100	102	101	101	98	96	95	101
232	236	225	227	214	215	225	221	221	224	213	220	223
64	68	62	65	58	64	66	63	64	60	64	68	72
114	121	113	114	112	109	119	111	122	111	118	123	126
45.0	48.5	45.5	46.7	40.8	46.7	46.8	45.0	45.6	43.7	43.5	48.9	50.0
80.2	86.3	83.1	82.0	78.8	79.6	84.3	79.2	87.1	81.0	80.2	88.5	87.4
47	47	44	48	45	48	47	50	51	43	48	48	48
43	34	39	39	36	37	37	36	34	42	32	34	40
38	33	35	34	36	35	35	35	34	35	36	36	36
91.5	72.3	88.6	81.2	80.0	77.1	78.9	72.0	66.6	97.6	66.6	70.8	83.3
66	59	60	57	60	60	60	65	62	59	65	62	61
36	39	35	37	32	36	44	39	44	38	33	39	41
54.5	66.1	58.3	64.9	53.3	60.0	73.3	60.0	70.9	64.4	50.8	62.9	67.2
105	105	103	102	107	103	107	105	104	102	108	107	112
112	105	106	104	107	105	112	107	101	103	103	112	113
106.7	100.0	102.9	101.9	100.0	101.9	104.7	101.9	97.1	100.9	95.3	104.7	100.9
83.6	72.2	77.5	79.3	81.5	77.2	85.0	80.3	81.2	77.5	74.5	75.4	84.9
99.9	98.4	102.9	102.5	102.1	100.9	102.7	103.9	103.0	103.6	103.4	102.1	102.2
53.2	51.5	51.4	51.9	53.1	50.6	53.3	51.3	53.4	51.4	51.8	51.5	51.5
44.7	43.6	45.8	46.1	45.2	45.0	45.5	46.8	44.7	46.5	—	44.9	47.2
46.8	48.4	48.5	48.0	46.8	49.3	46.6	48.7	46.6	48.6	48.1	48.4	48.4
24.8	23.7	23.7	24.4	25.0	22.4	23.4	23.6	25.1	24.3	25.4	25.4	22.6
76.7	78.5	76.4	75.6	72.5	75.9	71.6	79.2	75.7	81.0	70.0	69.0	70.1
94.6	93.9	92.5	94.5	94.7	94.4	92.1	92.7	89.2	95.1	95.4	90.8	94.7
76.7	80.2	80.5	74.3	77.2	83.4	85.1	84.2	77.5	77.9	79.5	78.7	80.5
109.6	114.5	126.1	110.9	117.2	114.9	115.9	117.4	121.7	112.7	117.1	113.1	112.2

TABLE OF INDIVIDUAL MEASUREMENTS AND INDICES—*Continued*

	61	62	63	64	65	66	67
1. PURE or MIXED Quichua	Pure	Pure	Pure	Pure	Pure	Pure	Pure
2. Locality	Anta	Anta-bamba	Sabay-no	Quiqui-jana	Sabay-no	Molle-pata	Media Luna
3. Age	40	19	18	48	18	35	35
4. Sex	M	M	M	M	M	M	M
5. Height—Total	1,675	1,574	1,579	1,549	1,499	1,579	1,626
6. To chin	1,462	1,346	1,355	1,335	1,282	1,348	1,382
7. To presternal notch	1,387	1,268	1,285	1,256	1,216	1,245	1,315
8. To acromion	1,365	1,268	1,308	1,245	1,202	1,291	1,327
9. Sitting	900	824	822	814	802	866	848
10. Kneeling	1,267	1,147	1,157	1,164	1,118	1,200	1,203
11. To knee	460	438	464	410	410	410	444
12. To internal malleolus	88	78	84	71	68	75	64
13. To umbilicus	955	939	942	922	886	909	988
14. Biacromial breadth	407	372	376	369	337	391	396
15. Bitrochanteric breadth	341	295	298	296	276	—	297
16. Upper Extremities—Span	1,671	1,680	1,628	1,597	1,529	1,578	1,524
17. Length of arm	302	298	300	284	282	292	233
18. Length of forearm and hand	433	439	444	420	404	421	440
19. Length of forearm	251	260	259	257	241	246	272
20. Length of hand	182	179	185	163	163	175	168
21. Length of arm and forearm	553	558	559	541	523	538	505
22. Forearm-arm index	83.1	87.2	86.3	90.5	85.4	84.2	116.7
23. Hand-stature index	10.8	11.3	11.7	10.5	10.8	11.0	10.3
24. Lower Extremities—Length of thigh	367	323	335	350	316	334	355
25. Length of leg	372	360	380	339	342	335	380
26. Length of thigh and leg	739	683	715	689	658	669	735
27. Length of foot	254	241	255	242	226	243	250
28. Supramalleolar circum. (greatest)	362	323	327	328	300	369	328
29. Supramalleolar circum. (least)	232	206	212	205	208	224	200
30. Leg-thigh index	101.3	111.4	113.4	96.8	108.2	100.2	107.0
31. Intermembral index	74.8	81.7	78.1	78.5	79.7	80.4	68.7
32. Foot-stature index	15.1	15.3	16.1	15.6	15.0	15.4	15.5
33. Head—Length	194	183	186	179	184	197	185
34. Breadth	151	153	145	144	152	150	150
35. Height	133	129	136	119	143	145	129
36. Circumference	565	541	538	531	535	559	552
37. Breadth index	77.8	83.6	77.9	80.4	82.6	76.1	81.1
38. Height index	68.5	70.5	73.1	66.4	77.7	73.6	69.7
39. Binauricular breadth	120	122	119	120	119	124	123
40. Bizygomatic breadth	142	145	135	139	132	145	144
41. Bigonial breadth	111	101	98	95	101	104	118
42. Interocular breadth	35	36	36	31	32	40	42
43. External biorbital breadth	83	90	90	83	78	90	90
44. Biorbito-nasal arc	100	109	109	91	88	102	111
45. Vertex to chin	225	224	224	231	212	231	237
46. Nasion to prosthion	67	69	68	55	58	66	64
47. Nasion to chin	122	119	121	106	112	113	116
48. Upper facial index	47.1	47.5	50.3	39.5	43.9	45.5	44.4
49. Total facial index	85.9	82.0	89.6	76.2	84.8	77.9	80.5
50. Nose—Height	50	43	51	44	41	45	44
51. Breadth	37	42	38	37	37	41	42
52. Base	33	35	37	—	—	38	36
53. Nasal index	74.0	97.6	74.5	84.1	90.2	91.1	95.4
54. Ear—Length	66	60	61	62	63	65	61
55. Breadth	38	36	39	34	33	35	33
56. Physiognomic ear index	57.6	60.0	63.9	54.8	52.4	53.8	54.1
57. Auriculo-nasal line	111	111	106	101	103	112	112
58. Auriculo-prosthionic line	100	112	112	109	102	112	116
59. Gnathic index	90.1	100.9	105.7	107.9	99.0	100.0	103.6
60. Arm-thigh index	82.2	92.2	89.5	81.1	89.2	87.4	65.6
61. Span-stature index	99.7	106.7	103.1	103.2	102.0	99.9	93.7
62. Height sitting-stature index	53.6	52.3	52.0	52.5	53.5	54.8	52.0
63. Upper extremity-stature index	43.8	46.8	47.1	45.4	45.7	45.1	41.4
64. Lower extremity-stature index	46.2	47.6	47.9	47.4	46.5	45.1	47.8
65. Shoulder width-stature index	24.3	23.6	23.8	23.8	22.5	24.7	24.4
66. Gonio-zygomatic index	78.2	69.6	72.5	68.3	76.5	71.7	81.9
67. Bizygomatic width-head width index	94.0	94.8	93.1	96.5	86.8	96.6	96.0
68. Hip width-shoulder width index	83.8	79.3	79.2	80.2	81.9	—	75.0
69. Naso-malar index	120.5	121.1	121.1	109.6	112.8	113.3	123.3

68	69	70	71	72	73	74	75	76	77	78	79
Pure Chinchay-puquio	Pure Huad-quiña	Pure Huad-quiña	Pure Anta	Pure Anta	Mixed Chillca	Pure Huaro-condo	Mixed Ollantay-tambo	Mixed Cuzco	Mixed Ollantay-tambo	Pure Ollantay-tambo	Mixed Maras
39	32	36	47	49	38	46	22	40	27	25	45
M	M	M	M	M	M	M	M	M	M	M	M
1,619	1,648	1,576	1,614	1,613	1,557	1,541	1,587	1,659	1,556	1,661	1,569
1,374	1,418	1,335	1,395	1,360	1,330	1,298	1,337	1,401	1,293	1,402	1,304
1,314	1,347	1,258	1,310	1,292	1,242	1,232	1,237	1,309	1,221	1,338	1,232
1,312	1,343	1,264	1,324	1,250	1,222	1,220	1,260	1,318	1,207	1,335	1,231
843	875	846	854	883	845	824	878	884	835	888	856
1,221	1,242	1,186	1,214	1,206	1,177	1,152	1,189	1,243	1,166	1,232	1,139
438	448	401	432	406	406	405	418	437	410	450	410
76	78	71	80	70	75	63	64	71	68	69	70
951	971	918	966	934	899	886	896	959	882	982	890
397	390	409	403	402	395	410	405	385	385	390	394
317	316	306	312	311	312	297	311	307	297	311	287
1,651	1,682	1,610	1,708	1,661	1,597	1,579	1,612	1,699	1,633	1,691	1,574
311	315	299	319	310	289	280	269	313	287	315	284
441	444	417	447	444	418	427	427	453	427	456	407
266	266	245	268	263	242	260	254	262	249	269	233
175	178	172	179	181	176	167	173	191	178	187	174
577	581	544	587	573	531	540	523	575	536	584	517
85.5	84.4	81.9	84.0	84.9	83.7	92.8	94.4	83.7	86.7	85.3	82.0
10.8	10.8	10.9	11.0	11.2	11.3	10.8	10.9	11.5	11.4	11.2	11.0
378	367	340	360	323	332	328	311	359	331	344	283
362	370	330	352	336	331	342	354	366	342	381	340
740	737	670	712	659	663	670	665	725	673	725	623
254	254	238	241	239	232	241	239	253	243	253	228
338	372	362	371	350	338	371	348	346	300	350	343
216	218	208	229	213	215	225	212	218	210	225	205
95.7	100.8	97.0	97.7	104.0	99.6	104.2	113.8	101.9	103.3	110.7	120.2
77.9	78.9	81.1	82.4	86.9	80.0	80.5	78.8	79.3	79.6	80.5	83.0
15.6	15.4	15.0	14.9	14.8	14.8	15.6	15.0	15.2	15.6	15.2	14.5
187	193	194	188	193	191	196	187	189	187	180	187
151	148	160	142	144	152	147	152	147	145	145	147
119	135	130	128	136	129	136	133	136	124	136	126
552	565	581	540	557	565	571	558	556	545	544	548
80.7	76.7	82.4	75.5	74.1	79.6	75.0	81.3	77.7	77.5	80.5	78.6
63.6	69.9	67.0	68.1	70.4	67.5	69.3	71.1	71.9	66.3	75.5	67.3
119	119	130	126	129	131	119	114	112	121	117	124
145	137	142	141	138	147	140	135	135	132	137	140
103	103	105	103	101	109	110	103	103	105	101	101
33	34	34	37	38	38	34	33	35	36	36	33
88	90	85	84	86	91	83	88	85	85	84	82
108	109	98	102	101	101	99	104	101	93	100	95
221	228	238	217	238	223	232	223	232	226	223	216
71	68	59	66	69	65	72	63	71	68	57	68
123	121	115	119	125	109	119	117	123	112	106	119
48.9	49.6	41.5	46.8	50.0	44.2	51.4	46.6	52.5	51.5	41.6	48.5
84.8	88.3	81.0	84.3	90.6	74.1	85.0	86.6	91.1	84.8	77.3	85.0
53	50	48	49	47	44	51	46	50	47	41	47
38	42	39	40	41	40	46	39	38	38	37	40
33	38	36	34	33	33	38	35	36	35	33	37
71.7	84.0	81.2	81.6	87.2	90.9	90.2	84.8	76.0	80.8	90.2	85.1
61	69	60	56	61	63	60	63	61	61	60	63
34	42	37	33	36	37	37	33	40	35	34	37
55.7	60.8	61.6	58.9	59.0	58.7	61.6	52.4	65.6	57.4	56.7	58.7
114	108	110	108	109	116	105	105	104	104	103	103
118	112	108	113	110	119	108	99	100	101	106	104
103.5	103.7	98.2	104.6	100.9	102.6	102.8	94.3	96.2	97.1	102.9	100.9
82.3	85.8	87.9	88.6	95.9	87.0	85.3	86.5	87.2	86.7	91.5	100.4
101.9	102.0	102.1	105.8	102.9	102.5	102.4	101.5	102.4	104.9	101.7	100.3
52.0	53.1	53.6	52.9	54.7	54.2	53.4	55.3	53.2	53.6	53.4	54.5
46.4	46.0	45.4	47.4	46.7	45.4	45.9	43.9	46.1	45.9	46.4	44.0
47.9	46.9	46.3	47.1	45.2	45.7	46.5	44.6	46.7	46.3	46.5	45.4
24.5	23.6	26.0	24.9	24.9	25.3	26.6	25.5	23.2	24.7	23.4	25.1
71.0	75.1	73.9	73.0	73.1	74.1	78.6	76.2	76.2	79.5	73.6	72.1
96.0	92.5	88.7	99.3	95.8	96.7	95.2	88.8	91.8	91.0	94.4	95.2
79.8	81.0	74.8	77.4	77.4	78.9	72.4	76.8	79.7	77.1	79.7	72.8
122.7	121.1	115.3	121.4	117.4	110.9	119.3	118.2	118.8	109.4	119.0	115.8

	80	81	82	83	84	85	86
1. PURE or MIXED Quichua	Pure	Pure	Mixed	Pure	Pure	Pure	Pure
2. Locality	Cuzco	Machu Picchu	Ollantay-tambo	Maras	Curpa-huasi	Curpa-huasi	Maras
3. Age	28	48	26	22	27	18	28
4. Sex	M	M	M	M	M	M	M
5. Height—Total	1,466	1,435	1,640	1,577	1,634	1,522	1,521
6. To chin	1,243	1,212	1,391	1,337	1,396	1,285	1,291
7. To presternal notch	1,164	1,126	1,329	1,256	1,315	1,222	1,214
8. To acromion	1,199	1,159	1,321	1,235	1,320	1,202	1,225
9. Sitting	818	767	866	850	848	821	842
10. Kneeling	1,120	1,066	1,214	1,187	1,188	1,114	1,146
11. To knee	378	397	450	422	460	415	398
12. To internal malleolus	72	73	80	75	78	68	71
13. To umbilicus	835	833	972	943	953	895	866
14. Biacromial breadth	381	367	392	384	402	382	406
15. Bitrochanteric breadth	286	297	314	303	294	274	297
16. Upper Extremities—Span	1,490	1,493	1,708	1,608	1,660	1,538	1,618
17. Length of arm	252	265	307	297	287	265	283
18. Length of forearm and hand	391	402	453	409	448	412	417
19. Length of forearm	226	236	271	247	275	254	251
20. Length of hand	165	166	182	162	173	158	166
21. Length of arm and forearm	478	501	578	544	562	519	534
22. Forearm-arm index	89.6	89.0	88.2	83.1	95.8	95.8	88.7
23. Hand-stature index	11.2	11.5	11.0	10.2	10.5	10.3	10.9
24. Lower Extremities—Length of thigh	302	299	348	337	340	293	304
25. Length of leg	306	324	370	347	382	347	327
26. Length of thigh and leg	608	623	718	684	722	640	631
27. Length of foot	225	235	265	235	236	223	227
28. Supramalleolar circum. (greatest)	323	352	338	331	351	335	355
29. Supramalleolar circum. (least)	208	225	227	215	220	217	209
30. Leg-thigh index	101.3	108.4	106.3	102.9	112.3	118.4	107.5
31. Intermembral index	78.6	80.4	80.5	79.5	77.8	81.1	84.6
32. Foot-stature index	15.3	16.3	16.1	14.9	14.4	14.6	14.9
33. Head—Length	178	187	190	185	180	180	184
34. Breadth	143	152	143	147	146	139	148
35. Height	124	128	126	129	133	132	128
36. Circumference	531	558	551	544	545	526	550
37. Breadth index	80.3	81.3	75.2	79.4	81.1	77.2	80.4
38. Height index	69.6	68.4	66.3	69.7	73.8	73.3	69.5
39. Binauricular breadth	122	119	122	122	117	114	122
40. Bizygomatic breadth	137	138	137	137	138	132	138
41. Bigonial breadth	100	94	103	101	108	101	108
42. Interocular breadth	31	37	37	35	31	35	34
43. External biorbital breadth	81	89	89	85	88	89	85
44. Biorbito-nasal arc	100	103	105	105	105	106	98
45. Vertex to chin	218	218	223	225	223	217	223
46. Nasion to Prosthion	62	62	62	62	59	59	60
47. Nasion to chin	109	108	119	113	110	106	115
48. Upper facial index	45.2	44.9	45.2	45.2	42.7	44.6	43.4
49. Total facial index	79.6	78.2	86.8	82.4	79.7	80.3	83.3
50. Nose—Height	45	48	42	45	45	46	46
51. Breadth	35	39	37	34	39	35	39
52. Base	31	34	34	33	36	31	34
53. Nasal index	77.7	81.2	88.1	75.5	86.6	76.1	84.8
54. Ear—Length	59	56	60	64	64	60	63
55. Breadth	31	33	35	37	35	32	37
56. Physiognomic ear index	52.5	58.9	58.2	57.8	54.7	53.3	58.7
57. Auriculo-nasal line	103	112	106	108	104	107	102
58. Auriculo-prosthionic line	108	117	108	104	112	107	107
59. Gnathic index	104.8	104.5	101.9	96.3	107.7	100.0	104.9
60. Arm-thigh index	83.4	88.6	88.2	88.1	84.4	90.4	93.1
61. Span-stature index	101.6	104.0	104.1	101.9	101.5	101.0	106.3
62. Height sitting-stature index	55.7	53.3	52.8	53.9	51.9	53.9	55.3
63. Upper extremity-stature index	43.8	46.5	46.3	44.7	44.9	44.4	46.0
64. Lower extremity-stature index	44.1	46.6	47.2	46.1	48.1	46.0	44.6
65. Shoulder width-stature index	26.0	25.5	23.9	24.3	24.6	25.1	26.6
66. Gonio-zygomatic index	72.9	68.1	75.1	73.6	78.2	76.5	78.2
67. Bizygomatic width-head width index	95.8	90.8	95.8	93.2	94.5	94.9	93.2
68. Hip width-shoulder width index	75.0	80.9	80.1	78.9	73.1	71.7	73.1
69. Naso-malar index	123.5	115.7	118.0	123.5	119.3	119.1	115.3

87	88	89	90	91	92	93	94	95	96	97	98
Pure Curpa-huasi	Pure Ollantay-tambo	Pure Ollantay-tambo	Pure Acos	Pure Pacha-chaca	Mixed Paruro	Mixed Santa Rosa	Mixed Acos	Mixed Tala-vera	Pure Huaro-condo	Pure Arma	Pure Coyllur-qui
26	30	35	30	35	60	48	50	40	50	50	50
M	M	M	M	M	M	M	M	M	M	M	M
1,625	1,555	1,528	1,713	1,513	1,653	1,770	1,611	1,658	1,523	1,568	1,553
1,361	1,315	1,275	1,475	1,292	1,409	1,538	13,93	1,393	1,289	1,353	1,342
1,315	1,242	1,213	1,398	1,223	1,354	1,431	1,294	1,338	1,223	1,275	1,266
1,311	1,238	1,195	1,400	1,230	1,314	1,419	1,310	1,334	1,227	1,288	1,244
885	805	822	897	835	848	889	860	892	825	868	801
1,202	1,157	1,146	1,280	1,145	1,224	1,319	1,203	1,220	1,148	1,201	1,170
439	417	400	489	401	462	488	431	442	404	419	413
65	75	70	83	59	70	75	65	65	70	75	65
952	901	878	1,034	888	1,022	1,094	950	949	885	941	933
384	370	379	425	350	390	397	391	380	383	410	382
303	296	304	—	300	305	—	—	—	—	—	—
1,570	1,582	1,557	1,762	1,536	1,728	1,742	1,646	1,662	1,564	1,599	1,598
285	277	269	297	275	305	311	308	306	274	283	278
432	413	415	—	420	475	477	435	455	407	429	427
254	243	251	—	249	306	289	257	263	236	255	253
178	170	164	197	171	169	188	178	192	171	174	174
539	520	520	—	524	611	600	565	569	510	538	531
89.1	87.7	93.3	—	90.5	100.3	92.9	83.5	85.9	86.1	90.1	91.0
10.9	10.9	10.7	11.5	11.3	10.2	10.6	11.0	11.5	11.2	11.0	11.2
317	352	324	383	310	376	430	343	328	323	333	369
374	342	330	406	342	392	413	366	377	334	344	348
691	694	654	789	652	768	843	709	705	657	677	717
247	245	225	—	227	269	270	247	256	220	246	241
360	339	325	400	326	357	371	347	350	325	405	352
211	214	196	236	195	242	218	216	220	201	232	214
118.0	97.1	101.8	106.0	110.3	104.2	96.0	106.7	114.9	103.4	103.3	94.2
78.0	74.9	79.5	—	80.3	79.6	71.0	79.6	80.7	77.6	79.5	74.1
15.2	15.7	14.7	—	15.0	16.3	15.2	15.2	15.4	14.4	15.7	15.5
195	190	184	192	172	190	182	185	200	182	193	188
146	153	148	153	148	145	146	144	155	141	157	149
138	130	136	144	139	137	148	133	143	129	136	128
560	570	542	564	527	558	529	541	586	524	567	542
74.8	80.5	80.4	79.7	86.1	76.3	80.2	77.8	77.5	77.4	81.3	79.2
70.8	68.4	73.9	75.0	80.8	72.1	81.3	71.8	71.5	70.8	70.4	68.0
117	125	114	123	115	118	123	117	124	113	125	119
140	145	137	144	140	140	144	135	143	136	147	142
100	106	101	109	103	108	113	110	97	106	104	100
34	35	33	40	34	38	33	31	35	32	38	33
86	89	86	98	85	87	87	86	91	84	93	80
103	103	95	108	95	95	98	98	101	99	108	89
225	228	215	248	225	233	224	228	224	217	218	218
62	61	54	68	61	65	70	63	62	55	68	57
111	110	109	128	115	117	114	118	111	103	119	114
44.2	42.0	39.4	47.2	43.5	46.4	48.6	46.6	43.4	40.4	46.3	40.1
79.3	75.8	79.5	88.8	82.1	83.5	79.1	87.4	77.6	75.7	80.9	80.2
51	43	39	50	42	50	47	43	45	40	47	42
37	38	39	38	41	40	37	39	37	39	47	41
36	31	34	36	38	39	34	36	36	35	38	34
72.5	88.3	100.0	76.0	97.6	80.0	78.7	90.7	82.2	97.5	100.0	97.6
58	55	60	63	69	67	62	65	67	57	63	67
38	36	37	35	37	44	34	39	36	39	33	35
65.5	65.5	61.7	55.5	53.6	65.6	54.8	60.0	53.7	68.4	52.4	52.2
107	113	108	112	102	108	114	105	111	105	122	107
105	113	107	114	98	103	110	104	109	103	116	108
98.1	100.0	99.1	101.8	96.1	95.3	96.5	99.0	98.2	98.1	95.1	100.9
89.9	78.7	83.0	77.5	88.7	81.1	72.3	89.8	93.3	84.8	84.9	75.3
96.6	101.7	101.9	102.9	101.5	104.5	98.4	102.1	100.2	102.6	101.9	102.9
54.5	51.8	53.8	52.3	55.1	51.3	50.2	53.3	53.8	54.1	55.3	51.5
44.1	44.3	44.7	—	45.9	47.0	44.4	46.1	45.8	44.6	45.4	45.3
45.5	48.2	46.2	47.6	44.7	48.7	49.8	46.6	46.2	45.8	44.6	48.4
23.6	23.8	24.8	24.8	23.1	23.6	22.4	24.2	22.9	25.1	26.1	24.6
71.4	73.1	73.6	75.6	73.5	77.1	78.5	81.5	67.8	77.9	70.7	70.4
95.8	94.7	92.5	94.1	94.6	96.5	98.6	93.7	92.2	96.4	93.6	95.3
78.9	80.0	80.2	—	85.7	78.2	—	—	—	—	—	—
119.8	115.7	110.5	110.2	111.8	109.2	112.7	113.9	110.9	117.8	116.1	111.2

	99	100	101	102	103	104
1. PURE or MIXED Quichua	Mixed	Pure	Pure	Mixed	Pure	Mixed
2. Locality	Lima-tambo	Anda-huaylas	Huad-quiña	Abancay Province	Cota-bambas	Huad-quiña
3. Age	28	23	21	38	50	28
4. Sex	M	M	M	M	M	M
5. Height—Total	1,550	1,604	1,497	1,570	1,458	1,554
6. To chin	1,337	1,365	1,271	1,360	1,229	1,342
7. To presternal notch	1,255	1,307	1,204	1,264	1,172	1,252
8. To acromion	1,278	1,303	1,194	—	1,154	1,223
9. Sitting	824	845	801	835	783	838
10. Kneeling	1,191	1,212	1,132	—	1,107	1,176
11. To knee	411	431	399	—	377	399
12. To internal malleolus	68	70	62	—	54	71
13. To umbilicus	917	960	892	—	852	874
14. Biacromial breadth	366	370	350	—	376	369
15. Bitrochanteric breadth	—	—	—	—	—	—
16. Upper Extremities—Span	1,601	1,624	1,520	1,571	1,524	1,544
17. Length of arm	302	285	263	—	270	281
18. Length of forearm and hand	417	434	408	415	415	396
19. Length of forearm	252	246	244	249	248	234
20. Length of hand	165	188	164	166	167	162
21. Length of arm and forearm	554	531	507	—	518	515
22. Forearm-arm index	83.4	86.3	92.7	—	91.9	83.2
23. Hand-stature index	10.6	11.7	10.9	10.5	11.4	10.4
24. Lower Extremities—Length of thigh	367	367	331	—	324	338
25. Length of leg	343	361	337	—	323	328
26. Length of thigh and leg	710	728	668	—	647	666
27. Length of foot	233	257	236	—	238	224
28. Supramalleolar circum. (greatest)	325	351	308	—	329	317
29. Supramalleolar circum. (least)	210	235	197	—	195	208
30. Leg-thigh index	93.5	98.3	101.8	—	99.7	97.0
31. Intermembral index	78.0	72.9	75.9	—	80.0	77.3
32. Foot-stature index	15.0	16.0	15.8	—	16.3	14.4
33. Head—Length	185	190	178	197	178	193
34. Breadth	148	147	146	155	148	143
35. Height	118	135	129	133	124	132
36. Circumference	544	554	512	572	532	549
37. Breadth index	80.0	77.3	82.0	78.7	83.1	74.1
38. Height index	63.7	71.0	72.4	67.5	69.6	68.4
39. Binauricular breadth	122	119	107	120	113	114
40. Bizygomatic breadth	135	138	133	139	145	132
41. Bigonial breadth	99	98	98	110	107	97
42. Interocular breadth	40	31	33	33	37	37
43. External biorbital breadth	87	86	84	88	90	83
44. Biorbito-nasal arc	99	95	98	97	102	96
45. Vertex to chin	202	238	218	223	217	213
46. Nasion to prosthion	60	61	63	57	71	55
47. Nasion to chin	101	115	109	108	124	101
48. Upper facial index	44.4	44.2	47.3	41.0	48.9	41.6
49. Total facial index	74.8	83.3	81.9	77.6	85.5	76.5
50. Nose—Height	39	45	44	47	51	43
51. Breadth	35	44	32	39	38	37
52. Base	30	38	32	35	39	34
53. Nasal index	89.7	97.7	72.7	83.0	74.5	86.0
54. Ear—Length	59	63	55	58	69	67
55. Breadth	33	37	30	36	41	35
56. Physiognomic ear index	55.9	58.7	54.5	62.0	59.3	52.2
57. Auriculo-nasal line	113	108	104	109	114	106
58. Auriculo-prosthionic line	107	108	103	110	109	106
59. Gnathic index	94.7	100.0	99.0	100.9	95.6	100.0
60. Arm-thigh index	82.3	77.6	79.4	—	83.3	83.1
61. Span-Stature index	103.3	101.2	101.6	100.0	104.5	99.4
62. Height sitting-stature index	53.1	52.6	53.1	53.2	53.7	53.9
63. Upper extremity-stature index	46.4	44.8	44.8	—	47.1	43.5
64. Lower extremity-stature index	46.8	47.3	46.5	46.8	46.2	46.0
65. Shoulder width-stature index	23.6	23.0	23.3	—	25.7	23.7
66. Gonio-zygomatic index	73.3	71.0	73.6	79.1	73.7	73.5
67. Bizygomatic width-head width index	91.2	93.8	91.1	89.6	97.9	92.3
68. Hip width-shoulder width index	—	—	—	—	—	—
69. Naso-malar index	113.8	110.5	116.6	110.2	113.3	115.6

105	106	107	108	109	110	111	112	113	114	115	116
Pure Maras	Pure Huadquiña	Mixed Mollepata	Mixed Santa Ana	Mixed Santa Ana	Pure Santa Ana	Pure Coyllurqui	Mixed Maras	Pure Huarocondo	Pure Huarocondo	Pure Cotabambas	Pure Huarocondo
25	32	55	38	27	26	36	35	30	23	35	38
M	M	M	M	M	M	F	M	M	M	M	M
1,618	1,616	1,621	1,337	1,491	1,533	1,426	1,565	1,624	1,585	1,634	1,561
1,380	1,378	1,392	1,136	1,293	1,325	1,229	1,364	1,406	1,390	1,402	1,359
1,303	1,308	1,306	1,089	1,232	1,262	1,182	1,298	1,356	1,310	1,342	1,291
1,309	1,328	1,338	1,077	1,187	1,220	—	1,299	1,323	1,289	1,337	1,294
823	845	836	751	781	821	794	837	847	855	878	856
1,196	1,205	1,184	1,032	1,099	1,156	1,087	1,186	1,242	1,221	1,242	1,202
458	441	437	345	422	422	—	438	448	418	442	428
70	76	67	63	75	72	—	75	78	73	75	85
985	970	966	750	874	924	—	951	975	973	976	952
395	396	357	329	352	371	—	401	410	375	394	418
—	—	—	268	298	298	—	311	—	300	300	307
1,638	1,712	1,519	1,371	1,536	1,608	1,458	1,635	1,704	1,611	1,637	1,640
307	311	307	241	265	285	—	298	300	295	297	292
449	449	421	374	421	427	382	445	438	427	453	446
269	272	254	221	251	256	219	271	254	259	277	261
180	177	167	153	170	171	163	174	184	168	176	185
576	583	561	462	516	541	—	569	554	554	574	553
87.6	87.4	82.7	91.7	94.7	89.8	—	90.9	84.6	87.7	93.2	89.6
11.1	10.9	10.2	11.4	11.4	11.1	11.4	11.1	11.2	10.5	10.7	11.8
373	360	348	281	318	335	293	349	395	366	364	346
388	365	370	282	347	350	—	363	370	345	367	343
761	725	718	563	665	685	—	712	765	711	731	689
244	241	253	196	245	234	212	243	258	235	254	253
340	348	345	270	304	334	—	365	360	311	335	358
208	210	216	165	198	198	—	218	220	201	199	213
104.0	101.3	106.3	100.4	109.1	104.4	—	104.0	93.6	94.2	100.8	99.1
75.6	80.4	78.1	82.0	77.5	78.9	—	79.9	72.4	77.9	78.5	80.3
15.0	14.9	15.6	14.6	16.4	15.2	14.9	15.5	15.8	14.8	15.5	16.2
181	181	186	169	184	173	185	183	198	184	196	188
152	146	148	133	154	150	147	145	147	141	157	150
130	141	135	126	103	133	132	132	135	136	123	115
545	535	549	502	557	528	552	542	574	524	578	558
83.9	80.6	79.5	78.7	83.7	86.7	79.4	79.2	74.2	76.6	80.1	79.8
71.8	77.8	72.5	74.5	55.9	76.8	71.4	72.1	68.1	73.9	62.7	61.1
120	123	119	104	122	118	113	114	123	116	124	119
142	140	133	126	136	133	135	135	146	134	145	144
101	104	93	93	98	96	95	94	114	102	104	102
34	35	38	32	34	28	38	36	32	31	37	35
85	85	86	84	88	79	96	89	89	83	86	91
98	100	102	91	101	92	106	103	108	90	101	101
223	222	230	200	196	224	214	226	228	224	224	217
61	58	70	50	58	56	63	66	62	62	65	69
111	106	120	92	101	112	112	117	114	113	119	127
42.9	41.4	52.6	39.6	42.6	42.1	46.6	48.8	42.5	46.2	44.8	47.9
78.1	75.7	90.2	73.0	74.2	84.1	82.9	86.6	78.1	84.3	82.0	88.1
47	44	51	39	42	44	40	47	49	49	52	46
38	37	39	38	36	33	30	38	38	39	36	39
36	34	35	30	34	34	30	32	35	36	34	40
80.8	84.1	76.4	97.4	85.7	75.0	75.0	80.9	77.5	79.6	69.2	84.8
57	60	67	54	60	51	50	56	63	64	58	66
37	33	40	35	34	30	32	33	31	35	34	35
64.9	55.0	59.7	64.8	50.6	58.8	64.0	58.9	49.2	54.7	58.6	53.0
107	111	114	102	101	102	107	104	108	103	112	111
104	111	116	94	105	101	113	104	109	103	109	105
97.2	100.0	101.8	92.1	103.9	99.0	105.6	100.0	100.9	100.0	97.3	94.6
82.3	86.4	88.2	85.7	83.3	85.0	—	85.4	75.9	80.6	81.6	84.4
101.2	105.9	93.7	102.5	103.0	104.8	102.2	104.4	104.9	101.6	100.1	105.0
50.8	52.2	51.5	56.1	52.3	53.5	55.6	53.7	52.1	53.9	53.6	54.8
46.7	47.0	44.9	45.9	46.0	46.4	—	47.4	45.4	45.5	45.9	47.2
49.1	47.7	48.4	43.8	47.6	46.4	44.3	46.5	47.8	46.0	46.2	45.1
24.4	24.5	22.1	24.6	23.6	24.2	—	25.6	25.2	23.6	24.1	26.7
71.1	74.2	69.9	73.8	72.0	72.1	70.3	69.6	78.1	76.1	71.7	70.8
93.4	95.8	89.8	94.7	88.3	88.6	91.8	93.1	99.3	95.0	92.3	96.0
—	—	—	81.5	84.7	80.3	—	77.5	—	80.0	76.1	73.4
115.3	117.6	118.6	108.3	114.8	116.5	110.4	115.7	121.4	108.4	117.4	110.9

	117	118	119	120	121	122
1. PURE or MIXED Quichua	Pure	Pure	Pure	Mixed	Pure	Mixed
2. Locality	Huaro-condo	Maras	Yucay	Santa Ana	Santa Ana	Ollantay-tambo
3. Age	18	35	50	35	40	42
4. Sex	M	M	M	M	M	M
5. Height—Total	1,488	1,678	1,571	1,574	1,574	1,624
6. To chin	1,278	1,473	1,375	1,368	1,382	1,405
7. To presternal notch	1,223	1,391	1,293	1,302	1,296	1,353
8. To acromion	1,182	1,374	1,268	1,301	1,265	1,352
9. Sitting	825	889	848	849	848	842
10. Kneeling	1,136	1,276	1,216	1,195	1,226	1,242
11. To knee	401	459	434	432	405	458
12. To internal malleolus	75	85	75	67	79	82
13. To umbilicus	892	1,020	925	942	951	998
14. Biacromial breadth	349	401	380	398	365	386
15. Bitrochanteric breadth	271	—	320	299	298	—
16. Upper Extremities—Span	1,458	1,689	1,610	1,685	1,572	1,701
17. Length of arm	268	306	281	313	285	315
18. Length of forearm and hand	387	458	438	441	423	455
19. Length of forearm	230	278	266	259	258	276
20. Length of hand	157	180	172	182	165	179
21. Length of arm and forearm	498	584	547	572	543	591
22. Forearm-arm index	85.8	90.8	94.6	82.7	90.5	87.6
23. Hand-stature index	10.5	10.7	10.9	11.5	10.4	11.0
24. Lower Extremities—Length of thigh	311	387	368	346	378	400
25. Length of leg	326	374	359	365	326	376
26. Length of thigh and leg	637	761	727	711	704	776
27. Length of foot	225	260	238	244	226	260
28. Supramalleolar circum. (greatest)	323	360	312	332	312	355
29. Supramalleolar circum. (least)	201	234	190	200	202	218
30. Leg-thigh index	104.8	96.6	97.6	105.4	86.2	94.0
31. Intermembral index	78.1	76.7	75.2	80.4	77.1	76.1
32. Foot-stature index	15.1	15.4	15.1	15.5	14.3	16.0
33. Head—Length	184	191	178	184	183	184
34. Breadth	148	153	148	148	154	130
35. Height	122	127	128	136	130	126
36. Circumference	546	558	536	543	552	527
37. Breadth index	80.4	80.1	83.1	80.4	84.1	70.6
38. Height index	66.3	66.4	71.8	73.9	71.0	68.4
39. Binauricular breadth	118	124	115	113	120	111
40. Bizygomatic breadth	143	145	137	138	141	133
41. Bigonial breadth	107	114	97	100	98	93
42. Interocular breadth	34	33	32	37	34	28
43. External biorbital breadth	85	96	82	89	90	83
44. Biorbito-nasal arc	96	111	89	108	98	89
45. Vertex to chin	210	209	217	225	217	235
46. Nasion to prosthion	57	67	68	63	62	62
47. Nasion to chin	101	123	118	114	111	115
48. Upper facial index	39.8	46.2	49.5	45.6	43.9	46.6
49. Total facial index	70.6	84.8	86.1	82.6	78.7	86.4
50. Nose—Height	45	52	53	49	45	45
51. Breadth	34	38	39	37	43	33
52. Base	31	38	35	35	38	32
53. Nasal index	75.5	73.0	73.6	75.5	95.6	73.3
54. Ear—Length	57	67	67	58	58	64
55. Breadth	32	35	35	31	33	32
56. Physiognomic ear index	56.1	52.2	52.2	53.4	56.9	50.0
57. Auriculo-nasal line	102	114	103	109	103	98
58. Auriculo-prosthionic line	102	111	104	110	104	101
59. Gnathic index	100.0	97.4	100.9	100.9	100.9	103.0
60. Arm-thigh index	86.2	79.1	76.3	90.4	75.4	78.7
61. Span-stature index	97.8	100.6	102.4	107.0	99.8	104.7
62. Height sitting-stature index	55.4	52.9	53.9	53.9	53.9	51.8
63. Upper extremity-stature index	44.0	45.5	45.8	47.9	44.9	47.7
64. Lower extremity-stature index	44.5	47.0	46.0	46.0	46.0	48.2
65. Shoulder width-stature index	23.4	23.9	24.1	25.2	23.2	23.8
66. Gonio-zygomatic index	74.8	78.6	70.8	72.4	69.5	69.9
67. Bizygomatic width-head width index	96.6	94.7	92.6	93.2	91.6	102.3
68. Hip width-shoulder width index	77.6	—	84.2	75.1	81.6	—
69. Naso-malar index	112.9	115.6	108.5	121.3	108.8	107.2

123	124	125	126	127	128	129	130	131	132	133
Pure Checca-cupe	Pure Cotabam-bas	Pure Cuzco	Pure Yucay	Pure Coyllur-qui	Pure Cotabam-bas	Pure Cotabam-bas	Pure Cuzco	Pure Huancar-ama	Pure Abancay	Pure Anta
62	30	35	30	35	48	45	30	45	40	28
M	M	M	M	M	M	M	M	M	M	M
1,677	1,596	1,536	1,580	1,681	1,607	1,680	1,555	1,503	1,568	1,624
1,473	1,392	1,328	1,359	1,458	1,415	1,465	1,330	1,290	1,328	1,384
1,390	1,312	1,239	1,276	1,373	1,318	1,377	1,258	1,225	1,273	1,326
1,388	1,280	1,238	1,283	1,382	1,305	1,385	1,258	1,212	1,259	1,308
892	864	868	858	875	820	855	848	805	855	875
1,278	1,221	1,189	1,202	1,253	1,227	1,252	1,172	1,136	1,191	1,218
462	423	393	418	452	440	485	398	392	417	445
85	74	77	64	76	75	75	70	60	73	80
1,031	974	868	925	1,001	968	1,002	910	869	901	948
399	377	415	391	369	376	379	369	375	375	362
336	300	300	294	298	299	——	295	298	302	311
1,699	1,611	1,541	1,624	1,686	1,633	——	1,568	1,530	1,649	1,668
308	289	271	276	315	292	325	294	287	291	300
458	433	411	447	453	446	466	411	410	433	447
278	263	249	275	268	269	275	241	238	263	265
180	170	162	172	185	177	191	170	172	170	182
586	552	520	551	583	561	600	535	525	554	565
90.2	91.0	91.8	99.6	85.0	92.1	84.6	81.9	82.9	90.3	88.3
10.7	10.6	10.5	10.9	11.0	11.0	11.3	10.9	11.4	10.8	11.2
386	357	321	344	378	407	397	324	331	336	343
377	349	316	354	376	365	410	328	332	344	365
763	706	637	698	754	772	807	652	663	680	708
257	233	234	247	250	246	261	245	235	231	251
335	305	350	316	320	327	311	332	336	358	342
225	194	210	207	208	196	222	215	218	211	221
97.6	97.7	98.4	102.9	99.4	89.6	103.2	101.2	100.3	102.4	106.4
76.6	78.1	81.6	78.9	77.3	72.7	74.3	82.0	79.1	81.5	79.8
15.3	14.5	15.2	15.6	14.8	15.3	15.5	15.8	15.6	14.7	15.4
178	184	197	184	187	185	190	183	188	187	189
153	145	160	147	151	149	153	149	148	153	150
121	128	129	128	121	127	140	132	132	135	125
550	532	575	542	565	536	558	542	548	549	561
85.9	78.8	81.2	79.8	80.7	80.5	80.5	81.4	78.7	81.8	79.3
68.0	69.5	65.5	69.5	64.7	68.6	73.6	72.1	70.2	72.2	66.1
122	121	131	124	114	119	119	120	112	116	123
141	138	151	145	142	136	142	138	137	143	142
112	103	105	99	110	102	102	100	101	102	98
33	29	38	37	37	35	33	31	37	35	36
86	80	96	88	90	84	90	93	87	88	89
98	90	109	98	101	99	99	98	98	98	105
214	220	233	222	221	210	226	217	206	227	227
63	65	68	67	63	69	63	67	72	65	65
111	115	127	117	107	111	113	116	127	114	110
44.7	47.1	45.0	46.2	44.3	50.7	44.3	48.5	52.5	45.4	45.7
78.7	83.3	84.1	80.7	75.3	81.6	79.5	84.0	92.7	79.7	77.4
43	51	49	54	48	49	46	51	50	48	48
36	36	38	38	34	36	40	38	39	36	37
33	31	35	34	32	31	36	34	36	34	34
83.7	70.6	77.5	70.3	70.8	73.4	87.0	74.5	78.0	75.0	77.1
65	62	65	58	58	60	63	59	63	59	63
40	31	33	33	30	34	36	32	30	36	36
61.5	50.0	50.7	56.9	51.7	56.7	57.1	54.2	47.6	61.0	57.1
102	107	114	110	110	106	111	106	105	103	112
104	112	120	112	105	108	111	107	103	108	115
101.9	104.6	105.2	101.8	95.4	101.9	100.0	100.9	98.1	104.8	102.7
79.8	81.0	84.4	80.2	83.3	71.7	81.8	90.7	86.7	86.6	87.4
101.3	100.9	100.3	102.8	100.3	101.6	——	100.8	101.7	105.1	102.7
53.1	54.1	56.5	54.3	52.0	51.0	50.9	54.4	53.5	54.5	53.8
45.7	45.2	44.4	45.7	45.7	45.9	47.0	45.3	46.3	46.1	45.9
46.8	45.8	43.4	45.7	48.0	49.0	49.1	45.4	46.4	45.4	46.1
23.8	23.6	27.0	24.7	21.9	23.4	22.5	23.7	24.9	23.9	22.2
79.4	74.6	69.5	68.2	77.4	75.0	71.8	72.5	73.6	71.3	69.0
92.2	95.2	94.3	98.6	94.0	91.2	92.8	92.6	92.6	93.4	94.7
84.2	79.5	72.3	75.2	80.7	79.5	——	79.9	79.5	80.5	85.9
113.9	112.5	113.5	111.4	112.2	117.8	110.0	105.4	112.7	111.4	117.9

	134	135	136	137
1. Pure or Mixed Quichua	Pure	Pure	Pure	Mixed
2. Locality	Iscu-chaca	Coyllur-qui	Santa Ana	Uru-bamba
3. Age	35	45	27	22
4. Sex	M	M	M	M
5. Height—Total	1,547	1,659	1,532	1,504
6. To chin	1,332	1,425	1,323	1,288
7. To presternal notch	1,252	1,360	1,243	1,225
8. To acromion	1,228	1,355	1,258	1,234
9. Sitting	844	850	798	798
10. Kneeling	1,177	1,226	1,153	1,128
11. To knee	403	461	410	407
12. To internal malleolus	75	75	65	65
13. To umbilicus	885	992	885	904
14. Biacromial breadth	389	387	374	351
15. Bitrochanteric breadth	300	295	297	272
16. Upper Extremities—Span	1,563	1,748	1,599	1,505
17. Length of arm	278	306	297	281
18. Length of forearm and hand	405	481	415	402
19. Length of forearm	231	285	250	235
20. Length of hand	174	196	165	167
21. Length of arm and forearm	509	591	547	516
22. Forearm-arm index	83.0	93.1	84.1	83.6
23. Hand-stature index	11.1	11.8	10.7	11.1
24. Lower Extremities—Length of thigh	333	376	355	330
25. Length of leg	328	386	345	342
26. Length of thigh and leg	661	762	700	672
27. Length of foot	244	268	247	230
28. Supramalleolar circum. (greatest)	338	325	322	320
29. Supramalleolar circum. (least)	210	220	197	200
30. Leg-thigh index	98.5	102.6	97.1	103.6
31. Intermembral index	77.0	77.5	78.1	76.8
32. Foot-stature index	15.7	16.1	16.1	15.2
33. Head—Length	186	184	178	184
34. Breadth	141	150	149	145
35. Height	121	125	132	128
36. Circumference	536	553	541	535
37. Breadth index	75.8	81.5	83.7	78.8
38. Height index	65.0	67.9	74.1	69.5
39. Binauricular breadth	106	115	116	112
40. Bizygomatic breadth	133	140	139	123
41. Bigonial breadth	101	96	96	97
42. Interocular breadth	32	37	35	35
43. External biorbital breadth	84	87	84	86
44. Biorbito-nasal arc	91	98	96	98
45. Vertex to chin	215	234	230	207
46. Nasion to prosthion	64	56	66	52
47. Nasion to chin	114	110	118	106
48. Upper facial index	48.1	40.0	47.5	42.2
49. Total facial index	85.7	78.5	84.8	86.2
50. Nose—Height	46	47	47	39
51. Breadth	36	42	37	32
52. Base	32	38	33	35
53. Nasal index	78.2	89.3	78.7	82.0
54. Ear—Length	69	66	55	53
55. Breadth	40	33	36	30
56. Physiognomic ear index	58.0	50.0	65.5	56.6
57. Auriculo-nasal line	108	110	105	103
58. Auriculo-prosthionic line	111	113	107	101
59. Gnathic index	102.8	102.7	101.9	98.0
60. Arm-thigh index	83.5	81.4	83.6	85.1
61. Span-stature index	101.0	105.3	104.3	100.0
62. Height sitting-stature index	54.5	51.2	52.1	53.0
63. Upper extremity-stature index	44.1	47.4	46.3	45.4
64. Lower extremity-stature index	45.4	48.8	47.8	46.8
65. Shoulder width-stature index	25.1	23.3	24.3	23.3
66. Gonio-zygomatic index	75.9	68.5	69.0	78.8
67. Bizygomatic width-head width index	94.3	93.3	93.3	84.8
68. Hip width-shoulder width index	77.1	76.2	79.4	77.5
69. Naso-malar index	108.3	112.7	114.3	113.9

138	139	140	141	142	143	144	145
Pure Santa Ana	Mixed Cuzco	Mixed San Sebastian	Mixed Vilca-bamba	Mixed Uru-bamba	Pure Uru-bamba	Pure Santo Tomas	Pure Santo Tomas
48	29	48	40	35	48	35	38
M	M	M	M	M	M	M	M
1,589	1,599	1,554	1,664	1,618	1,629	1,706	1,616
1,355	1,395	1,342	1,428	1,382	1,416	1,457	1,408
1,292	1,312	1,290	1,356	1,316	1,332	1,401	1,318
1,284	1,299	1,252	1,360	1,305	1,323	1,374	1,300
903	847	801	877	842	896	909	858
1,208	1,209	1,175	1,249	1,212	1,243	1,272	1,198
432	425	422	465	448	421	482	436
82	71	69	80	69	82	88	78
938	950	892	997	958	973	1,028	965
406	388	390	425	367	409	430	395
326	293	—	—	—	—	—	—
1,610	1,645	1,625	1,760	1,652	1,642	1,739	1,662
289	274	298	310	294	298	314	297
424	449	430	473	444	438	462	444
254	266	258	284	264	276	274	267
170	183	172	189	180	162	188	177
543	540	556	594	558	574	588	564
87.9	97.1	86.5	91.6	89.7	92.6	87.2	89.9
10.7	11.4	11.1	11.3	11.1	9.9	11.0	10.9
305	362	374	372	370	347	363	340
350	354	353	385	379	339	394	358
655	716	727	757	749	686	757	698
244	250	240	267	249	255	266	256
354	341	316	359	317	355	370	361
217	223	195	235	206	218	245	218
114.8	97.8	94.3	103.4	102.4	97.7	108.5	105.3
82.8	75.4	76.4	78.4	74.4	83.6	77.7	80.8
15.3	15.6	15.4	16.1	15.3	15.6	15.6	15.8
200	182	195	188	186	178	191	189
155	141	151	146	152	142	146	153
138	133	125	129	131	125	125	127
579	540	552	552	553	532	566	571
77.5	77.4	77.4	77.6	81.7	79.7	76.4	80.9
69.0	73.0	64.1	68.6	70.4	70.2	65.4	67.1
126	110	121	124	115	116	121	123
145	135	142	144	135	139	140	148
106	101	94	105	90	111	101	105
39	40	33	36	32	30	38	39
90	90	87	90	82	80	95	94
104	102	101	99	98	90	100	107
232	221	212	246	225	222	218	221
68	61	68	63	67	68	72	68
118	112	122	120	122	126	126	118
46.8	45.1	47.8	43.7	49.6	48.9	51.4	45.9
81.3	82.9	85.9	83.3	90.3	90.6	90.0	79.7
49	47	52	46	49	50	53	49
42	37	41	36	34	41	36	34
39	34	36	35	30	34	33	34
85.7	78.7	78.8	78.2	67.3	82.0	68.0	69.4
67	64	66	65	60	60	55	63
38	38	37	38	36	33	35	36
56.7	59.4	56.0	58.4	60.0	55.0	63.6	57.1
120	103	111	103	111	104	108	113
118	103	108	111	108	109	109	110
98.3	100.0	97.3	107.7	97.3	104.8	100.9	97.3
94.7	75.7	79.6	83.3	79.6	85.9	86.5	87.3
101.3	102.8	104.5	105.6	102.1	100.8	101.9	102.8
56.8	52.9	51.5	52.7	52.5	55.0	53.2	53.1
44.8	45.2	46.8	47.0	45.4	45.1	45.6	45.8
43.1	47.0	48.4	47.2	47.9	44.9	46.7	46.9
25.5	24.2	25.1	25.5	22.6	25.1	25.2	24.4
73.1	74.0	66.1	72.9	66.6	79.8	72.1	70.9
93.5	95.7	94.0	98.6	88.8	97.9	95.8	96.7
80.3	75.5	—	—	—	—	—	—
115.5	113.3	116.1	110.0	119.5	112.5	105.3	113.8

EARS

Total Number

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length	61.1	72	1	50	5, 111	22
Breadth	36.1	57	21	30	5, 17, 101, 110, 127, 131, 137	26
Physiognomic ear index	59.2	93.4	21	47.6	131	45.8

Pure

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length	60.9	72	1	50	5, 111	22
Breadth	36	57	21	30	5, 17, 101, 110, 127, 131	27
Physiognomic ear index	59.5	93.4	21	47.6	131	45.8

Mixed (White)

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length	62	67	92, 95, 104, 107	53	137	14
Breadth	35	44	92	30	137	14
Physiognomic ear index	58.3	65.6	76, 92	50.0	122	15.6

NOSE

Total Number

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Height	46.7	54	126	39	2, 89, 99, 108, 137	15
Breadth	37.6	47	97	30, 32	111 ♀ or 34, 43, 58, 101, 137	17, 15
Length of base	35.0	57(?) or 40	31 or 116	30	5, 99, 108, 111 ♀, 142	27
Nasal index	81.9	102.5	2	65.4	23	37.1

Pure

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Height	47.0	54	126	39	2, 89	15
Breadth	38.0	47	97	30 or 32	111 ♀ or 34, 43, 58, 101 ♂	17, 15
Length of base	35.0	57(?) or 40	31(?) or 116	30	5 ♂, 111 ♀	27(?) or 10
Nasal Index	81.8	102.5	2	65.4	23	37.1

Mixed (White)

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Height	46.0	52	140	39	99, 108, 137	13
Breadth	37.0	41	140	32	137	9
Length of base	34.0	39	92	30	99, 108, 142	9
Nasal index	82.2	97.4	108	69.4	142	28.0

Total number

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Height, total	1,585	1,770	93	1,337	108	433
Height to chin	1,358	1,538	93	1,136	108	402
Height to presternal notch	1,288	1,431	93	1,089	108	342
Height to acromion	1,284	1,419	93	1,077	108	342
Height sitting	837	909	144	725	41	184
Height kneeling	1,194	1,319	93	1,032	108	287
Height to knee	428	489	90	345	108	144
Height to internal malleolus	74	88	61, 144	54	103	34
Height to umbilicus	936	1,094	93	750	108	344
Biacromial breadth	381	430	144	329	108	101
Bitrochanteric breadth	303	341	61	268	108	73
Height sitting—stature index	52.2	56.8	138	48.4	8	8.4
Upper extremity—stature index	45.5	47.9	120	41.4	67	6.5
Lower extremity—stature index	47.1	51.5	8	43.1	138	8.4
Span—stature index	102.3	107.3	47	93.7	67, 107	13.6
Shoulder width—stature index	24.3	27.3	125	21.3	7	6.0
Arm—thigh index	82.0	100.4	79	65.6	67	34.8
Hip width—shoulder width index	79.2	90.9	7	71.7	85	19.2

Pure

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Height total	1,584	1,713	90	1,422	41	291
" to chin	1,358	1,479	16	1,212	81	267
" to presternal notch	1,288	1,401	144	1,126	81	275
" to acromion	1,285	1,411	16	1,154	103	257
" sitting	836	909	144	725	41	184
" kneeling	1,196	1,296	16	1,066	81	230
" to knee	427	489	90	377	103	112
" to internal malleolus	74	88	61, 144	54	103	34
" to umbilicus	936	1,034	90	833	81	201
Biacromial breadth	381	430	144	331	24	99
Bitrochanteric breadth	304	341	61	271	117	70
Height sitting—stature index	51.6	56.8	138	48.4	8	8.4
Upper extremity—stature index	45.5	47.7	42	41.4	67	6.3
Lower extremity—stature index	47.2	51.5	8	43.1	138	8.4
Span—stature index	102.3	107.3	47	93.7	67	13.6
Shoulder width—stature index	24.0	27.0	125	21.3	7	5.7
Arm—thigh index	81.5	95.9	72	65.6	67	30.3
Hip width—shoulder width index	79.3	90.9	7	71.7	85	19.2

Mixed (White)

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Height total	1,587	1,770	93	1,337	108	433
" to chin	1,359	1,538	93	1,136	108	402
" to presternal notch	1,288	1,431	93	1,089	108	342
" to acromion	1,279	1,419	93	1,077	108	342
" sitting	842	892	95	751	108	141
" kneeling	1,184	1,319	93	1,032	108	287
" to knee	429	488	93	345	108	143
" to internal malleolus	71	82	122	63	108	19
" to umbilicus	934	1,094	93	750	108	344
Biacromial breadth	382	425	141	329	108	96
Bitrochanteric breadth	298	314	82	268	108	46
Height sitting—stature index	53.0	56.1	108	50.2	93	5.9
Upper extremity—stature index	46.0	47.9	120	43.5	104	4.4
Lower extremity—stature index	46.9	49.8	93	43.8	108	6.0
Span—stature index	102.7	107.0	120	93.7	107	13.3
Shoulder width—stature index	23.9	25.6	112	22.1	93	3.5
Arm—thigh index	84.9	100.4	79	72.3	93	28.1
Hip width—shoulder width index	78.1	84.7	109	72.8	79	11.9

Upper Extremities.

Total number

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Span	1,621	1,762	90	1,371	108	391
Length of arm	290	337	60	233(?) or 241	67(?) or 108	104(?) or 96
" of forearm and hand	431	481	135	374	108	107
" of forearm	255	306	92	219, 221	111 ♀, 108	87, 85
" of hand	174	197	90	153	108	44
" of arm and forearm	547	611	15, 92	462	108	149
Forearm—arm index	88.0	116.7(?) or 100.3	67(?) or 92	77.4	2	39.3(?) or 22.9
Hand—stature index	10.9	12.2	1	9.6	40	2.6

Pure

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Span	1,620	1,762	90	1,458	111 ♀, 117	304
Length of arm	292	337	60	233(?) or 252	67(?) or 80	104(?) or 85
" of forearm and hand	430	481	135	381	41	100
" of forearm	254	293	15	219, 225	111 ♀, 41	74, 68
" of hand	174	197	90	156	41	41
" of arm and forearm	546	611	15	478	80	133
Forearm—arm index	88.1	116.7(?) or 99.6	67(?) or 126	77.4	2	39.3(?) or 22.2
Hand—stature index	10.9	12.2	1	9.6	40	2.6

Mixed (white)

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Span	1,623	1,760	141	1,371	108	389
Length of arm	294	315	122	241	108	74
" of forearm and hand	434	477	93	374	108	103
" of forearm	258	306	92	221	108	85
" of hand	175	192	95	153	108	39
" of arm and forearm	552	611	92	462	108	149
Forearm—arm index	87.6	100.3	92	82.0	79	18.3
Hand—stature index	11.0	11.5	76, 95, 120	10.2	92, 107	1.3

Lower Extremities

Total Number

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length of thigh	358	430	93	281	108	149
Length of leg	354	413	93	282	108	131
Length of thigh and leg	707	843	93	563	108	280
Length of foot	244	274	15	196	108	78
Supramalleolar circumference (greatest)	339	405	97	270	108	135
Supramalleolar circumference (least)	214	245	144	165	108	80
Intermembral index	77.3	86.9	72	68.7	67	18.2
Foot—stature index	15.2	16.4	109	14.1	40	2.3
Leg—thigh index	99.3	120.2	79	80.9	26	39.3

Pure

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length of thigh.....	360	415	7, 16	293	III ♀, 85	122
Length of leg.....	353	410	129	306	80	104
Length of thigh and leg.	707	807	129	608	80	199
Length of foot.....	244	274	15	212, 220	III ♀, 96	62, 54
Supramalleolar circumference (greatest)...	341	405	97	287	41	118
Supramalleolar circumference (least).....	214	245	144	190	119	55
Intermembral index...	77.4	86.9	72	68.7	67	18.2
Foot—stature index ...	15.1	16.3	81, 103	14.1	40	2.2
Leg—thigh index.....	98.5	118.4	85	80.9	26	37.5

Mixed (White)

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length of thigh.....	352	430	93	281	108	149
Length of leg.....	357	413	93	282	108	131
Length of thigh and leg.....	710	843	93	563	108	280
Length of foot.....	245	270	93	196	108	74
Supramalleolar circumference (greatest) .	335	371	93	270	108	101
Supramalleolar circumference (least)	211	242	92	165	108	77
Intermembral index.....	76.8	83.0	79	71.0	93	12.0
Foot—stature index.....	15.3	16.4	109	14.4	104	2.0
Leg—thigh index	103.4	120.2	79	93.5	99	26.7

Head

Total Number

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length.....	186.6	201	31	169	108	32
Breadth.....	147.6	160	70, 125	130	122	30
Height.....	130.0	148	93	103	109	45
Circumference.....	552	587	31	502	108	85
Breadth index.....	79.8	90.2	27	70.6	122	19.6
Height index.....	69.4	81.3	93	55.9	109	25.4
Binauricular breadth..	120	135	3, 30	104	108	31
Bizygomatic breadth..	140	186(?) or 151	5(?) or 125	123	137	63(?) or 28
Bigonial breadth.....	103.2	119	13	90	142	29
Interocular breadth...	34.9	42	67	28	44, 110, 122	14
External biorbital breadth.....	87.7	103	28	78	65	25
Biorbital-nasal arc....	100.7	117	22	88	65	29
Vertex to chin.....	222.7	248	90	194	41	54
Nasion to prosthion...	64.3	73	27	50	108	23
Nasion to chin.....	116.4	132	45	92	108	40
Upper facial index....	46.0	52.6	107	34.4(?) or 39.4	5(?) or 89	18.2(?) or 13.2
Total facial index.....	82.9	93.2	34	60.7(?) or 70.6	5(?) or 117	32.5(?) or 22.6
Auriculo-nasal line....	107.0	122.0	97,	98.0	24, 122	24.0
Auriculo-prosthionic line.....	108.5	120	40,45, 125	94.0	108	26.0
Gnathic index (based on above lines).....	101.4	113.2	45	90.1	61	23.1
Naso-malar index.....	114.6	126.1	50	105.2	1	20.9
Gonio-zygomatic index	73.5	81.9	67	55.3	5	26.6
Bizygomatic width—head width index...	94.0	128.2(?) or 102.3	5(?) or 122	84.8	137	43.4(?) or 17.5

Pure

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length	185	201	31	172	91	29
Breadth	148	160	70, 125	139	34, 85	21
Height	129	146	37	115	116	31
Circumference	549	587	31	512	101	75
Breadth index	79.9	90.2	27	73.1	6	17.1
Height index	68.6	80.8	91	61.1	116	19.7
Binauricular breadth	120	135	3, 30	106	134	29
Bizygomatic breadth	141	186(?) or 151	5(?) or 125	132	17, 65, 85	54(?) or 19
Bigonial breadth	104	119	13	93	33	26
Interocular breadth	34.8	42	67	28	44, 110	14
External biorbital breadth	88	103	28	78	65	25
Biorbito-nasal arc	101	117	22	88	65	29
Vertex to chin	223	248	90	194	41	54
Nasion to prosthion	65	73	27	54	89	19
Nasion to chin	116	132	45	101	117	31
Upper facial index	45.9	52.5	131	34.4(?) or 39.4	5(?) or 89	18.1(?) or 13.1
Total facial index	82.9	93.2	34	60.7(?) or 70.6	5(?) or 117	32.5(?) or 22.6
Auriculo-nasal line	107	122	97	98	24	24
Auriculo-prosthionic line	109	120	40, 45, 125	98	91	22
Gnathic index (based on above lines)	101.8	113.2	45	90.1	61	23.1
Naso-malar index	114.7	126.1	50	105.2	1	20.9
Gonio-zygomatic index	73.5	81.9	67	55.3	5	26.6
Bizygomatic width—head width index	94.2	128.2(?) or 100.7	5 or 1	86.8	65	41.4(?) or 13.9

Mixed (White)

	Average	Greatest	Serial No.	Least	Serial No.	Range of Variation
Length	187	200	95	169	108	31
Breadth	146	155	95, 102	130	122	25
Height	130	148	93	103	109	45
Circumference	547	586	95	502	108	84
Breadth index	78.5	83.7	109	70.6	122	13.1
Height index	69.5	81.3	93	55.9	109	25.4
Binauricular breadth	118	131	73	104	108	27
Bizygomatic breadth	132	147	73	123	137	24
Bigonial breadth	100	113	93	90	142	23
Interocular breadth	35.0	40	99, 139	28	122	12
External biorbital breadth	83	91	73	82	79, 142	9
Biorbito-nasal arc	99	108	120	89	122	19
Vertex to chin	221	246	141	196	109	50
Nasion to prosthion	63	71	76	50	108	21
Nasion to chin	117	123	76	92	108	31
Upper facial index	46.1	52.6	107	39.6	108	13.0
Total facial index	82.8	91.1	76	73.0	108	18.1
Auriculo-nasal line	106	116	73	101	108	15
Auriculo-prosthionic line	106	119	73	94	108	25
Gnathic index (based on above lines)	99.1	107.7	141	92.1	108	15.6
Naso-malar index	114.4	121.3	120	107.2	122	14.1
Gonio-zygomatic index	73.5	81.5	94	66.1	140	15.4
Bizygomatic width—head width index	93.2	102.3	122	84.8	137	17.5

Ears

Length of Ear	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Breadth of Ear	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Physiognomic Ear Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
50	2	2	—	30	7	6	1	47	1	1	—
51	2	2	—	31	4	3	1	48	—	—	—
52	—	—	—	32	8	7	1	49	1	1	—
53	2	1	1	33	17	14	3	50	5	4	1
54	2	1	1	34	10	8	2	51	5	5	—
55	6	6	—	35	20	16	4	52	8	6	2
56	4	3	1	36	16	13	3	53	10	8	2
57	7	7	—	37	19	16	3	54	8	7	1
58	14	12	2	38	16	14	2	55	7	6	1
59	8	7	1	39	10	9	1	56	10	7	3
60	20	17	3	40	6	4	2	57	13	12	1
61	11	9	2	41	6	6	—	58	14	9	5
62	8	7	1	42	1	1	—	59	4	2	2
63	19	16	3	43	—	—	—	60	12	10	2
64	8	6	2	44	4	3	1	61	7	7	—
65	12	10	2					62	5	4	1
66	5	4	1	57	1	1	—	63	4	4	—
67	9	5	4					64	9	8	1
68	1	1	—					65	10	8	2
69	4	4	—					66	3	3	—
70	—	—	—					67	2	2	—
71	—	—	—					68	1	1	—
72	1	1	—					69	—	—	—
								70	2	2	—
								71	—	—	—
								72	—	—	—
								73	1	1	—
								74	—	—	—
								75	—	—	—
								76	—	—	—
								77	1	1	—
								86	1	1	—
								93	1	1	—
Total	145	121	24		145	121	24		145	121	24

Nose

Nose Height	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Nose Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Base of Nose	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
39	5	2	3	30	1	1 ♀	—	30	5	2	3
40	2	2	—	31	—	—	—	31	7	7	—
41	4	4	—	32	5	4	1	32	7	5	2
42	5	3	2	33	3	2	1	33	15	14	1
43	8	6	2	34	9	8	1	34	29	24	5
44	12	11	1	35	4	3	1	35	23	16	7
45	17	15	2	36	11	9	2	36	27	23	4
46	13	11	2	37	23	17	6	37	10	8	1
47	18	12	6	38	28	24	4	38	14	14	—
48	18	18	—	39	22	18	4	39	4	3	1
49	12	10	2	40	10	7	3	40	1	1	—
50	10	8	2	41	12	11	1	57	1	1	—
51	11	10	1	42	8	8	—				
52	5	4	1	43	6	6	—				
53	4	4	—	44	1	1	—				
54	1	1	—	45	—	—	—				
				46	1	1	—				
				47	1	1	—				
Total	145	121	24		145	121	24		142	118	24

NOSE—*Continued*

Nasal Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed White, No. of Cases	Naso-malar Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed White, No. of Cases
65	1	1	—				
66	2	2	—				
67	—	—	—	105	5	5	—
68	1	1	—	106	—	—	—
69	5	4	1	107	4	3	1
70	4	4	—	108	6	5	1
71	2	2	—	109	5	3	2
72	5	5	—	110	11	7	4
73	6	5	1	111	7	7	—
74	4	4	—	112	13	12	1
75	6	5	1	113	20	16	4
76	6	4	2	114	8	7	1
77	6	6	—	115	14	11	3
78	9	5	4	116	5	4	1
79	6	6	—	117	12	12	—
80	9	6	3	118	6	2	4
81	5	5	—	119	9	8	1
82	5	3	2	120	5	5	—
83	6	5	1	121	7	6	1
84	10	9	1	122	3	3	—
85	4	2	2	123	4	4	—
86	5	4	1	124	—	—	—
87	2	2	—	125	—	—	—
88	5	4	1	126	1	1	—
89	2	1	1				
90	6	4	2				
91	4	4	—				
92	1	1	—				
93	4	4	—				
94	—	—	—				
95	3	3	—				
96	—	—	—				
97	7	6	1				
98	—	—	—				
99	—	—	—				
100	3	3	—				
101	—	—	—				
102	1	1	—				
Total	145	121	24		145	121	24

HEIGHTS

Stature (in Cm.)	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Height to Chin	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Height to Prest. Notch	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
133	1	—	1	113	1	—	1	108	1	—	1
142	2	2	—	121	1	1	—	109	—	—	—
143	1	1	—	122	3	3	—	110	—	—	—
144	—	—	—	123	—	—	—	111	—	—	—
145	1	1	—	124	1	1	—	112	1	1	—
146	1	1	—	125	1	1	—	113	—	—	—
147	—	—	—	126	—	—	—	114	—	—	—
148	2	2	—	127	3	3	—	115	—	—	—
149	3	2	1	128	5	4	1	116	1	1	—
150	2	1	1	129	9	7	2	117	2	2	—
151	4	4	—	130	2	1	1	118	1	1	—
152	5	5	—	131	5	5	—	119	—	—	—
153	4	4	—	132	12	12	—	120	1	1	—
154	8	8	—	133	11	8	3	121	4	4	—
155	16	11	5	134	11	9	2	122	8	6	2
156	10	8	2	135	9	9	—	123	6	3	3
157	14	12	2	136	9	6	3	124	7	6	1
158	6	5	1	137	5	5	—	125	13	11	2
159	6	5	1	138	8	7	1	126	10	9	1
160	6	6	—	139	12	7	5	127	9	9	—
161	10	8	2	140	12	9	3	128	9	9	—
162	11	9	2	141	8	8	—	129	11	8	3
163	6	6	—	142	4	3	1	130	8	5	3
164	4	3	1	143	3	3	—	131	15	13	2
165	7	4	3	144	—	—	—	132	6	5	1
166	2	1	1	145	3	3	—	133	7	6	1
167	6	6	—	146	2	2	—	134	5	5	—
168	3	3	—	147	4	4	—	135	5	2	3
169	1	1	—	148	—	—	—	136	6	6	—
170	1	1	—	149	—	—	—	137	2	2	—
171	1	1	—	150	—	—	—	138	2	2	—
172	—	—	—	151	—	—	—	139	3	3	—
173	—	—	—	152	—	—	—	140	1	1	—
174	—	—	—	153	1	—	1	141	—	—	—
175	—	—	—					142	—	—	—
176	—	—	—					143	1	—	1
177	1	—	1								
Total	145	121	24		145	121	24		145	121	24

HEIGHTS—*Continued*

Height to Acromion	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Height, Sitting	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Height Kneeling	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
107	1	—	1	720	1	1	—	1,030	1	—	1
108	—	—	—	730	—	—	—	1,040	—	—	—
109	—	—	—	740	—	—	—	1,050	—	—	—
110	—	—	—	750	2	1	1	1,060	2	2	—
111	—	—	—	760	1	1	—	1,070	—	—	—
112	—	—	—	770	1	1	—	1,080	1	1	—
113	—	—	—	780	5	4	1	1,090	1	—	1
114	—	—	—	790	7	6	1	1,100	1	1	—
115	2	2	—	800	14	13	1	1,110	2	2	—
116	—	—	—	810	11	11	—	1,120	2	1	1
117	—	—	—	820	14	13	1	1,130	5	4	1
118	3	2	1	830	15	10	5	1,140	9	9	—
119	3	3	—	840	26	20	6	1,150	7	7	—
120	3	2	1	850	15	14	1	1,160	8	7	1
121	4	4	—	860	9	7	2	1,170	9	6	3
122	8	6	2	870	10	8	2	1,180	14	11	3
123	8	6	2	880	7	5	2	1,190	11	9	2
124	6	6	—	890	4	3	1	1,200	18	16	2
125	8	7	1	900	3	3	—	1,210	11	9	2
126	11	10	1					1,220	12	10	2
127	11	10	1					1,230	6	6	—
128	8	8	—					1,240	10	7	3
129	7	5	2					1,250	5	5	—
130	11	9	2					1,260	2	2	—
131	8	5	3					1,270	4	4	—
132	9	8	1					1,280	1	1	—
133	9	7	2					1,290	1	1	—
134	4	4	—					1,300	—	—	—
135	6	5	1					1,310	1	—	1
136	4	3	1								
137	3	3	—								
138	3	3	—								
139	—	—	—								
140	1	1	—								
141	2	1	1								
Total	143	120	23		145	121	24		144	121	23

HEIGHTS—*Continued*

Height to Knee	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Height to Internal Malleolus	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Height to Umbilicus	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
340	1	—	1	54	1	1	—	750	1	—	1
350	—	—	—	55	—	—	—	760	—	—	—
360	—	—	—	56	—	—	—	770	—	—	—
370	2	2	—	57	—	—	—	780	—	—	—
380	—	—	—	58	1	1	—	790	—	—	—
390	11	10	1	59	1	1	—	800	—	—	—
400	18	16	2	60	1	1	—	810	—	—	—
410	26	22	4	61	—	—	—	820	—	—	—
420	19	16	3	62	2	2	—	830	2	2	—
430	24	19	5	63	2	1	1	840	—	—	—
440	15	13	2	64	3	2	1	850	2	2	—
450	11	9	2	65	6	3	3	860	6	6	—
460	11	9	2	66	1	1	—	870	3	1	2
470	1	1	—	67	2	—	2	880	10	9	1
480	4	3	1	68	6	4	2	890	10	6	4
				69	4	2	2	900	11	10	1
				70	11	9	2	910	9	8	1
				71	6	3	3	920	9	9	—
				72	12	12	—	930	9	9	—
				73	7	7	—	940	12	10	2
				74	4	4	—	950	14	9	5
				75	21	17	4	960	8	7	1
				76	8	8	—	970	13	12	1
				77	2	2	—	980	8	8	—
				78	10	10	—	990	5	3	2
				79	6	6	—	1,000	4	4	—
				80	4	2	2	1,010	—	—	—
				81	2	2	—	1,020	4	3	1
				82	4	3	1	1,030	2	2	—
				83	8	8	—	1,040	—	—	—
				84	1	1	—	1,050	—	—	—
				85	4	4	—	1,060	—	—	—
				86	—	—	—	1,070	—	—	—
				87	1	1	—	1,080	—	—	—
				88	2	2	—	1,090	1	—	1
Total	143	120	23		143	120	23		143	120	23

HEIGHTS—*Continued*

Span-stature Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Height Sitting-stature Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Upper Extremity-stature Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
93.0	2	1	1	48.0	1	1	—	41.4	1	1	—
94.0	—	—	—	48.5	—	—	—				
95.0	—	—	—	49.0	—	—	—				
96.0	1	1	—	49.5	1	1	—				
97.0	1	1	—	50.0	6	5	1				
98.0	2	1	1	50.5	9	9	—				
99.0	11	10	1	51.0	10	9	1	43.2	1	1	—
100.0	18	14	4	51.5	18	15	3	43.4	1	—	1
101.0	29	28	1	52.0	16	15	1	43.6	2	2	—
102.0	30	24	6	52.5	13	9	4	43.8	7	6	1
103.0	17	15	2	53.0	22	17	5	44.0	4	3	1
104.0	16	10	6	53.5	21	16	5	44.2	1	1	—
105.0	10	9	1	54.0	9	8	1	44.4	4	3	1
106.0	5	5	—	54.5	8	7	1	44.6	9	9	—
107.0	2	1	1	55.0	6	5	1	44.8	8	7	1
				55.5	2	2	—	45.0	5	5	—
				56.0	1	—	1	45.2	9	8	1
				56.5	2	2	—	45.4	13	10	3
								45.6	7	7	—
								45.8	16	13	3
								46.0	10	7	3
								46.2	5	4	1
								46.4	10	9	1
								46.6	4	4	—
								46.8	4	3	1
								47.0	8	6	2
								47.2	3	3	—
								47.4	6	5	1
								47.6	2	1	1
								47.8	1	—	1
Total	144	120	24		145	121	24		141	118	23

Breadths

Bia-cromial Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Bitro-chanteric Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Span	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
320	—	—	—	260	—	—	—	1,370	1	—	1
325	1	—	1	265	1	—	1	1,380	—	—	—
330	2	2	—	270	4	3	1	1,390	—	—	—
335	2	2	—	275	3	3	—	1,400	—	—	—
340	—	—	—	280	2	2	—	1,410	—	—	—
345	2	2	—	285	4	3	1	1,420	—	—	—
350	5	3	2	290	10	9	1	1,430	—	—	—
355	5	4	1	295	22	19	3	1,440	—	—	—
360	2	2	—	300	18	18	—	1,450	2	2	—
365	12	9	3	305	17	15	2	1,460	1	1	—
370	9	9	—	310	16	12	4	1,470	—	—	—
375	15	15	—	315	5	5	—	1,480	—	—	—
380	14	13	1	320	7	7	—	1,490	2	2	—
385	12	8	4	325	5	5	—	1,500	1	—	1
390	17	12	5	330	—	—	—	1,510	2	1	1
395	17	14	3	335	2	2	—	1,520	4	4	—
400	10	9	1	340	1	1	—	1,530	5	4	1
405	8	7	1					1,540	3	2	1
410	5	5	—					1,550	6	6	—
415	2	2	—					1,560	6	6	—
420	—	—	—					1,570	8	6	2
425	2	1	1					1,580	2	2	—
430	1	1	—					1,590	12	11	1
								1,600	8	7	1
								1,610	8	7	1
								1,620	9	8	1
								1,630	7	5	2
								1,640	10	8	2
								1,650	2	1	1
								1,660	9	8	1
								1,670	3	3	—
								1,680	6	5	1
								1,690	6	5	1
								1,700	6	4	2
								1,710	6	6	—
								1,720	2	1	1
								1,730	1	1	—
								1,740	3	2	1
								1,750	1	1	—
								1,760	2	1	1
Total	143	120	23		117	104	13		144	120	24

Length of Arm	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Length of Fore-arm and Hand	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Length of Forearm	Entire Group, No. of Cases	Pure No. of Cases	Mixed (White), No. of Cases
230	1	1	—	370	1	—	1	215	1	1	—
235	—	—	—	375	—	—	—	220	1	—	1
240	1	—	1	380	2	2	—	225	2	2	—
245	—	—	—	385	1	1	—	230	5	3	2
250	1	1	—	390	1	1	—	235	6	5	1
255	1	1	—	395	2	1	1	240	11	10	1
260	1	1	—	400	4	3	1	245	18	16	2
265	9	7	2	405	11	10	1	250	21	17	4
270	5	4	1	410	9	9	—	255	15	12	3
275	8	8	—	415	14	11	3	260	19	16	3
280	17	14	3	420	14	11	2	265	16	15	1
285	14	12	2	425	8	7	2	270	11	9	2
290	17	16	1	430	14	13	1	275	11	10	1
295	17	15	2	435	7	6	1	280	1	—	1
300	15	14	1	440	13	12	2	285	3	2	1
305	14	9	5	445	14	11	2	290	1	1	—
310	11	7	4	450	10	8	2	295	—	—	—
315	8	7	1	455	7	5	2	300	—	—	—
320	1	1	—	460	4	4	—	305	1	—	1
325	1	1	—	465	2	2	—				
330	—	—	—	470	2	1	1				
335	1	1	—	475	2	—	2				
				480	1	1	—				
Total	143	120	23		143	119	24		143	119	24

Length of Hand	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Length of Arm and Forearm	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Forearm-Arm Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
150	1	—	1	460	1	—	1	77	1	1	—
155	8	8	—	465	—	—	—	78	2	2	—
160	15	14	1	470	—	—	—	79	2	2	—
165	23	18	5	475	1	1	—	80	—	—	—
170	33	28	5	480	—	—	—	81	2	2	—
175	26	22	4	485	—	—	—	82	5	2	3
180	19	15	4	490	1	1	—	83	13	7	6
185	13	11	2	495	1	1	—	84	14	14	—
190	5	3	2	500	1	1	—	85	8	7	1
195	2	2	—	505	4	4	—	86	11	9	2
				510	1	1	—	87	20	19	1
				515	8	4	4	88	8	7	1
				520	9	8	1	89	9	8	1
				525	1	1	—	90	11	10	1
				530	12	11	1	91	8	6	2
				535	9	8	1	92	10	9	1
				540	14	13	1	93	3	3	—
				545	7	7	—	94	5	3	2
				550	11	10	1	95	3	3	—
				555	9	7	2	96	1	1	—
				560	10	9	1	97	1	—	1
				565	7	4	3	98	1	1	—
				570	4	3	1	99	1	1	—
				575	7	5	2	100	1	—	1
				580	8	8	—	116	1	1	—
				585	6	6	—				
				590	3	1	2				
				595	—	—	—				
				600	3	2	1				
				605	1	1	—				
				610	2	1	1				
Total	145	121	24		141	118	23		141	118	23

UPPER EXTREMITIES—*Continued*

Hand-Stature Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Shoulder Width-Stature Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Hip Width-Shoulder Width Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
9.0	—	—	—	21.2	1	1	—				
9.2	—	—	—	21.4	1	1	—	71	1	1	—
9.4	—	—	—	21.6	—	—	—	72	4	3	1
9.6	1	1	—	21.8	1	1	—	73	4	4	—
9.8	1	1	—	22.0	1	—	1	74	4	4	—
10.0	1	1	—	22.2	2	2	—	75	9	7	2
10.2	6	4	2	22.4	5	4	1	76	5	4	1
10.4	16	14	2	22.6	4	3	1	77	15	12	3
10.6	20	18	2	22.8	1	—	1	78	6	4	2
10.8	34	33	1	23.0	4	4	—	79	19	18	1
11.0	24	16	8	23.2	9	7	2	80	18	17	1
11.2	19	17	2	23.4	9	9	—	81	13	12	1
11.4	15	8	7	23.6	16	12	4	82	1	1	—
11.6	5	5	—	23.8	11	9	2	83	3	3	—
11.8	2	2	—	24.0	4	4	—	84	8	7	1
12.0	—	—	—	24.2	9	7	2	85	4	4	—
12.2	1	1	—	24.4	9	9	—	86	1	1	—
				24.6	8	6	2	87	1	1	—
				24.8	12	12	—	88	—	—	—
				25.0	12	10	2	89	—	—	—
				25.2	6	4	2	90	1	1	—
				25.4	8	6	2				
				25.6	3	2	1				
				25.8	—	—	—				
				26.0	3	3	—				
				26.2	—	—	—				
				26.4	—	—	—				
				26.6	3	3	—				
				26.8	—	—	—				
				27.0	1	1	—				
				27.2	—	—	—				
Total	145	121	24		143	120	23		117	104	13

Lower Extremities

Length of Thigh and Leg	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Length of Thigh	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Length of Leg	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
				280	2	—	2	280	1	—	1
560	1	—	1	290	3	3	—	290	—	—	—
570	—	—	—	300	3	3	—	300	1	1	—
580	—	—	—	310	6	4	2	310	3	3	—
590	—	—	—	320	10	9	1	320	11	10	1
600	1	1	—	330	18	14	4	330	24	23	1
610	—	—	—	340	18	13	5	340	25	20	5
620	2	1	1	350	11	10	1	350	25	22	3
630	3	3	—	360	22	20	2	360	16	12	4
640	3	3	—	370	17	13	4	370	19	14	5
650	8	8	—	380	13	13	—	380	12	11	1
660	9	5	4	390	10	10	—	390	3	2	1
670	7	5	2	400	6	5	1	400	1	1	—
680	12	12	—	410	4	4	—	410	2	1	1
690	5	5	—	420	—	—	—				
700	15	13	2	430	1	—	1				
710	18	11	7								
720	14	12	2								
730	8	8	—								
740	10	9	1								
750	6	5	1								
760	6	6	—								
770	7	6	1								
780	2	2	—								
790	4	4	—								
800	1	1	—								
810	—	—	—								
820	—	—	—								
830	—	—	—								
840	1	—	1								
Total	143	120	23		144	121	23		143	120	23

LOWER EXTREMITIES—*Continued*

Length of Foot	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Supramalleolar Circumference (Greatest)	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Supermalleolar Circumference (Least)	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
190	—	—	—	270	1	—	1	160	—	—	—
195	1	—	1	275	—	—	—	165	1	—	1
200	—	—	—	280	—	—	—	170	—	—	—
205	—	—	—	285	2	2	—	175	—	—	—
210	1	1	—	290	—	—	—	180	—	—	—
215	—	—	—	295	—	—	—	185	—	—	—
220	4	3	1	300	4	2	2	190	3	3	—
225	12	11	1	305	2	2	—	195	15	13	2
230	10	7	3	310	7	7	—	200	9	7	2
235	22	21	1	315	9	6	3	205	22	19	3
240	27	23	4	320	10	9	1	210	22	19	3
245	21	18	3	325	12	11	1	215	28	21	7
250	23	20	3	330	10	9	1	220	16	14	2
255	9	8	1	335	14	12	2	225	12	11	1
260	5	4	1	340	9	7	2	230	7	7	—
265	5	2	3	345	9	5	4	235	5	4	1
270	2	1	1	350	14	13	1	240	1	—	1
				355	17	14	3	245	2	2	—
				360	10	10	—				
				365	4	3	1				
				370	6	5	1				
				375	—	—	—				
				380	1	1	—				
				385	—	—	—				
				390	—	—	—				
				395	—	—	—				
				400	1	1	—				
				405	1	1	—				
Total	142	119	23		143	120	23		143	120	23

LOWER EXTREMITIES—*Continued*

Lower Extremity-Stature Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Inter-membral Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Foot-Stature Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
43.0	1	1	—	67	—	—	—	13.0	—	—	—
43.2	—	—	—	68	1	1	—	13.2	—	—	—
43.4	1	1	—	69	1	1	—	13.4	—	—	—
43.6	—	—	—	70	1	1	—	13.6	—	—	—
43.8	1	—	1	71	2	1	1	13.8	—	—	—
44.0	1	1	—	72	7	7	—	14.0	1	1	—
44.2	1	1	—	73	3	3	—	14.2	1	1	—
44.4	1	1	—	74	15	14	1	14.4	5	3	2
44.6	4	3	1	75	19	18	1	14.6	8	7	1
44.8	1	1	—	76	8	5	3	14.8	13	12	1
45.0	2	2	—	77	20	18	2	15.0	20	18	2
45.2	2	2	—	78	18	14	4	15.2	27	22	5
45.4	5	4	1	79	14	9	5	15.4	26	22	4
45.6	4	3	1	80	16	12	4	15.6	21	18	3
45.8	3	3	—	81	7	7	—	15.8	6	6	—
46.0	10	8	2	82	5	4	1	16.0	8	5	3
46.2	7	5	2	83	2	1	1	16.2	5	4	1
46.4	9	8	1	84	1	1	—	16.4	1	—	1
46.6	7	5	2	85	—	—	—				
46.8	10	7	3	86	1	1	—				
47.0	6	5	1								
47.2	5	3	2								
47.4	2	2	—								
47.6	9	8	1								
47.8	7	6	1								
48.0	7	7	—								
48.2	5	4	1								
48.4	8	6	2								
48.6	5	4	1								
48.8	3	3	—								
49.0	7	7	—								
49.2	1	1	—								
49.4	3	3	—								
49.6	3	3	—								
49.8	2	1	1								
50.0	—	—	—								
50.2	—	—	—								
50.4	1	1	—								
50.6	—	—	—								
50.8	—	—	—								
51.0	—	—	—								
51.2	—	—	—								
51.4	1	1	—								
Total	145	121	24		141	118	23		142	119	23

LOWER EXTREMITIES—*Continued*

Arm-thigh Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Leg-thigh Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
				80	1	1	—
				85	3	3	—
65	1	1	—	86	2	2	—
				87	1	1	—
69	1	1	—	88	—	—	—
70	—	—	—	89	8	8	—
71	2	2	—	90	5	5	—
72	5	4	1	91	4	4	—
73	1	1	—	92	3	3	—
74	4	4	—	93	6	5	1
75	6	5	1	94	6	4	2
76	7	7	—	95	6	6	—
77	9	9	—	96	7	6	1
78	8	7	1	97	14	12	2
79	10	8	2	98	5	5	—
80	4	4	—	99	8	7	1
81	12	11	1	100	9	8	1
82	6	5	1	101	9	8	1
83	12	9	3	102	6	5	1
84	9	9	—	103	6	3	3
85	12	9	3	104	7	5	2
86	8	6	2	105	3	2	1
87	6	4	2	106	5	2	3
88	6	4	2	107	3	3	—
89	4	3	1	108	3	3	—
90	3	2	1	109	1	—	1
91	1	1	—	110	2	2	—
92	1	1	—	111	1	1	—
93	2	1	1	112	1	1	—
94	1	1	—	113	3	2	1
95	1	1	—	114	2	1	1
100	1	—	1	118	2	2	—
				119	—	—	—
				120	1	—	1
Total	143	120	23		143	120	23

Head Length	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Head Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Head Height	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
169	1	—	1	130	1	—	1	103	1	—	1
170	—	—	—	131	—	—	—				
171	—	—	—	132	—	—	—	115	1	1	—
172	1	1	—	133	1	—	1	116	—	—	—
173	2	2	—	134	—	—	—	117	—	—	—
174	—	—	—	135	—	—	—	118	4	3	1
175	1.	1	—	136	—	—	—	119	5	5	—
176	1	1	—	137	—	—	—	120	1	1	—
177	2	2	—	138	—	—	—	121	3	3	—
178	8	8	—	139	2	2	—	122	2	2	—
179	1	1	—	140	—	—	—	123	3	3	—
180	4	4	—	141	4	3	1	124	7	6	1
181	4	4	—	142	2	2	—	125	7	6	1
182	5	3	2	143	4	2	2	126	6	2	4
183	5	4	1	144	5	4	1	127	6	6	—
184	19	15	4	145	14	10	4	128	15	14	1
185	11	9	2	146	9	7	2	129	8	6	2
186	10	8	2	147	16	14	2	130	5	5	—
187	13	10	3	148	15	12	3	131	4	3	1
188	8	7	1	149	10	10	—	132	10	8	2
189	3.	2	1	150	10	10	—	133	10	6	4
190	8	6	2	151	10	9	1	134	4	4	—
191	5	4	1	152	11	8	3	135	9	8	1
192	4	4	—	153	13	13	—	136	12	10	2
193	9	8	1	154	5	4	1	137	3	2	1
194	5	5	—	155	4	2	2	138	5	5	—
195	4	3	1	156	1	1	—	139	2	2	—
196	3	3	—	157	4	4	—	140	3	3	—
197	4	3	1	158	1	1	—	141	3	3	—
198	1	1	—	159	1	1	—	142	—	—	—
199	—	—	—	160	2	2	—	143	2	1	1
200	3	2	1					144	1	1	—
								145	1	1	—
								146	1	1	—
								147	—	—	—
								148	1	—	1
Total	145	121	24		145	121	24		145	121	24

HEAD AND FACE—*Continued*

Head Circumference	Entire Group, No. of Cases	Pure, No of Cases	Mixed (White), No. of Cases	Head Breadth Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Head Height Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
500	1	—	1	70	1	—	1	55	1	—	1
505	—	—	—	71	—	—	—	56	—	—	—
510	1	1	—	72	—	—	—	57	—	—	—
515	—	—	—	73	1	1	—	58	—	—	—
520	2	2	—	74	5	4	1	59	—	—	—
525	5	3	2	75	8	7	1	60	—	—	—
530	6	6	—	76	8	7	1	61	1	1	—
535	12	11	1	77	22	15	7	62	2	2	—
540	19	14	5	78	15	11	4	63	6	5	1
545	20	16	4	79	16	13	3	64	3	2	1
550	19	15	4	80	25	22	3	65	8	8	—
555	15	11	4	81	17	15	2	66	10	8	2
560	9	9	—	82	7	7	—	67	8	5	3
565	16	15	1	83	11	10	1	68	17	14	3
570	10	9	1	84	1	1	—	69	22	21	1
575	5	5	—	85	1	1	—	70	14	13	1
580	1	1	—	86	2	2	—	71	15	11	4
585	4	3	1	87	1	1	—	72	8	5	3
				88	2	2	—	73	15	13	2
				89	1	1	—	74	4	3	1
				90	1	1	—	75	2	2	—
								76	3	3	—
								77	2	2	—
								78	—	—	—
								79	1	1	—
								80	2	2	—
								81	1	—	1
Total	145	121	24		145	121	24		145	121	24

HEAD AND FACE—*Continued*

Binaural Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Bizygomatic Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Bigonial Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
104	1	—	1	123	1	—	1	90	1	—	1
105	—	—	—	124	—	—	—	91	—	—	—
106	1	1	—	125	—	—	—	92	—	—	—
107	2	2	—	126	1	—	1	93	4	1	3
108	—	—	—	127	—	—	—	94	3	1	2
109	—	—	—	128	—	—	—	95	3	3	—
110	3	2	1	129	—	—	—	96	4	4	—
111	1	—	1	130	—	—	—	97	5	2	3
112	3	1	2	131	—	—	—	98	12	11	1
113	4	3	1	132	5	3	2	99	3	2	1
114	9	6	3	133	7	5	2	100	8	7	1
115	5	4	1	134	1	1	—	101	18	16	2
116	8	8	—	135	11	4	7	102	8	8	—
117	5	4	1	136	6	5	1	103	14	11	3
118	7	6	1	137	11	10	1	104	8	8	—
119	18	17	1	138	12	11	1	105	8	6	2
120	12	11	1	139	7	6	1	106	8	8	—
121	7	5	2	140	19	17	2	107	5	5	—
122	14	11	3	141	6	6	—	108	6	5	1
123	13	12	1	142	15	14	1	109	5	4	1
124	9	6	3	143	7	6	1	110	5	3	2
125	3	3	—	144	10	8	2	111	5	5	—
126	6	6	—	145	12	12	—	112	6	6	—
127	1	1	—	146	4	4	—	113	1	—	1
128	—	—	—	147	5	4	1	114	2	2	—
129	3	3	—	148	1	1	—	115	1	1	—
130	4	4	—	149	2	2	—	116	—	—	—
131	4	3	1	150	—	—	—	117	—	—	—
132	—	—	—	151	1	1	—	118	1	1	—
133	—	—	—	186(?)	1	1	—	119	1	1	—
134	—	—	—								
135	2	2	—								
Total	145	121	24		145	121	24		145	121	24

HEAD AND FACE—*Continued*

Interocular Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	External Biorbital Breadth	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Biorbitonasal Arc	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
28	3	2	1	78	1	1	—	88	1	1	—
29	1	1	—	79	1	1	—	89	3	2	1
30	3	3	—	80	3	3	—	90	4	4	—
31	12	11	1	81	1	1	—	91	5	4	1
32	11	9	2	82	8	6	2	92	2	2	—
33	20	15	5	83	9	7	2	93	2	1	1
34	17	16	1	84	12	11	1	94	—	—	—
35	18	15	3	85	10	8	2	95	8	6	2
36	15	12	3	86	11	8	3	96	6	5	1
37	16	13	3	87	14	10	4	97	1	—	1
38	16	13	3	88	18	15	3	98	19	15	4
39	5	5	—	89	12	9	3	99	10	8	2
40	5	3	2	90	18	16	2	100	9	9	—
41	2	2	—	91	3	1	2	101	19	14	5
42	1	1	—	92	4	4	—	102	11	9	2
				93	4	4	—	103	6	5	1
				94	8	8	—	104	4	3	1
				95	1	1	—	105	7	6	1
				96	4	4	—	106	3	3	—
				97	1	1	—	107	2	2	—
				98	1	1	—	108	9	8	1
				99	—	—	—	109	7	7	—
				100	—	—	—	110	—	—	—
				101	—	—	—	111	5	5	—
				102	—	—	—	112	1	1	—
				103	1	1	—	113	—	—	—
								114	—	—	—
								115	—	—	—
								116	—	—	—
								117	1	1	—
Total	145	121	24		145	121	24		145	121	24

Vertex to Chin	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Nasion to Prosthion	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Nasion to Chin	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
194	1	1	—	50	1	—	1	92	1	—	1
				51	—	—	—				
196	1	—	1	52	1	—	1	101	4	1	3
197	1	1	—	53	—	—	—	102	1	1	—
198	1	1	—	54	1	1	—	103	1	1	—
				55	4	3	1	104	—	—	—
200	1	—	1	56	2	2	—	105	—	—	—
201	1	1	—	57	4	3	1	106	5	4	1
202	1	—	1	58	5	4	1	107	1	1	—
				59	3	3	—	108	2	1	1
				60	4	3	1	109	6	5	1
				61	6	5	1	110	6	6	—
206	1	1	—	62	15	12	3	111	9	8	1
207	1	—	1	63	13	9	4	112	7	5	2
				64	10	10	—	113	8	8	—
209	2	2	—	65	11	9	2	114	11	9	2
210	2	2	—	66	9	8	1	115	6	5	1
211	4	4	—	67	12	11	1	116	5	5	—
212	3	2	1	68	17	14	3	117	6	3	3
213	5	4	1	69	10	10	—	118	7	6	1
214	4	4	—	70	7	5	2	119	11	9	2
215	3	3	—	71	3	2	1	120	8	6	2
216	3	2	1	72	6	6	—	121	4	4	—
217	9	9	—	73	1	1	—	122	6	4	2
218	7	7	—					123	6	5	1
219	1	1	—					124	4	4	—
220	2	2	—					125	1	1	—
221	6	5	1					126	6	6	—
222	4	4	—					127	7	7	—
223	10	6	4					128	1	1	—
224	8	6	2					129	2	2	—
225	11	9	2					130	2	2	—
226	4	2	2					131	—	—	—
227	6	6	—					132	1	1	—
228	6	5	1								
229	2	2	—								
230	4	3	1								
231	2	2	—								
232	6	5	1								
233	2	1	1								
234	2	2	—								
235	3	2	1								
236	1	1	—								
237	2	2	—								
238	4	4	—								
239	1	1	—								
240	1	1	—								
242	2	2	—								
243	1	1	—								
246	1	—	1								
247	1	1	—								
248	1	1	—								
Total	145	121	24		145	121	24		145	121	24

Morphologic Upper Facial Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Morphologic Total Facial Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Bizygomatic Width-head Width Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
34	1	1	—	60	1	1	—				
35	—	—	—	61	—	—	—				
36	—	—	—	62	—	—	—				
37	—	—	—	63	—	—	—				
38	—	—	—	64	—	—	—				
39	4	3	1	65	—	—	—				
40	7	7	—	66	—	—	—				
41	5	3	2	67	—	—	—				
42	10	8	2	68	—	—	—	84	1	—	1
43	9	7	2	69	—	—	—	85	—	—	—
44	16	14	2	70	1	1	1	86	1	1	—
45	19	16	3	71	—	—	—	87	—	—	—
46	21	17	4	72	—	—	—	88	6	3	3
47	16	15	1	73	1	—	1	89	5	3	2
48	13	10	3	74	4	1	3	90	5	5	—
49	8	7	1	75	5	5	—	91	8	5	3
50	8	8	—	76	3	2	1	92	20	18	2
51	5	4	1	77	6	4	2	93	21	18	3
52	3	1	2	78	9	9	—	94	25	23	2
53	—	—	—	79	11	10	1	95	21	18	3
54	—	—	—	80	10	10	—	96	16	14	2
				81	7	7	—	97	6	6	—
				82	12	10	2	98	3	1	2
				83	9	7	2	99	4	4	—
				84	14	13	1	100	1	1	—
				85	12	10	2	101	—	—	—
				86	8	3	5	102	1	—	1
				87	7	6	1	103	—	—	—
				88	7	7	—				
				89	2	2	—	128?	1	1	—
				90	8	6	2				
				91	3	2	1				
				92	4	4	—				
				93	1	1	—				
Total	145	121	24		145	121	24		145	121	24

Goniozygomatic Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Goniozygomatic Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
55	1	1	—	69	11	8	3
56	—	—	—	70	10	10	—
57	—	—	—	71	16	16	—
58	—	—	—	72	15	11	4
59	—	—	—	73	18	16	2
60	—	—	—	74	10	7	3
61	—	—	—	75	14	13	1
62	—	—	—	76	9	7	2
63	—	—	—	77	7	6	1
64	1	1	—	78	13	11	2
65	1	1	—	79	7	5	2
66	2	—	2	80	1	1	—
67	1	—	1	81	3	2	1
68	5	5	—	82	—	—	—
Total					145	121	24

HEAD AND FACE—*Continued*

Auriculo-nasal Line	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Auriculo-prosthionic Line	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases	Gnathic Index	Entire Group, No. of Cases	Pure, No. of Cases	Mixed (White), No. of Cases
98	2	1	1	94	1	—	1	90	1	1	—
99	1	1	—	95	—	—	—	91	—	—	—
100	—	—	—	96	—	—	—	92	1	—	1
101	3	2	1	97	—	—	—	93	—	—	—
102	9	8	1	98	1	1	—	94	3	1	2
103	16	12	4	99	2	1	1	95	5	4	1
104	12	9	3	100	2	1	1	96	4	2	2
105	14	12	2	101	5	2	3	97	8	5	3
106	10	8	2	102	5	5	—	98	9	7	2
107	14	14	—	103	8	6	2	99	10	9	1
108	15	14	1	104	9	6	3	100	34	28	6
109	8	6	2	105	7	6	1	101	19	17	2
110	7	7	—	106	7	6	1	102	11	10	1
111	12	9	3	107	12	11	1	103	13	11	2
112	8	8	—	108	15	12	3	104	10	10	—
113	4	3	1	109	11	10	1	105	4	4	—
114	6	4	2	110	8	5	3	106	4	4	—
115	1	1	—	111	15	14	1	107	4	3	1
116	1	—	1	112	12	12	—	108	2	2	—
117	—	—	—	113	7	7	—	109	2	2	—
118	—	—	—	114	2	2	—	110	—	—	—
119	—	—	—	115	3	3	—	111	—	—	—
120	1	1	—	116	5	4	1	112	—	—	—
121	—	—	—	117	1	1	—	113	1	1	—
122	1	1	—	118	2	2	—	114	—	—	—
				119	2	1	1				
				120	3	3	—				
Total	145	121	24		145	121	24		145	121	24

EXPLANATION OF PLATES

It is to be regretted that the photographs are not all on the same scale so that the differences would show more clearly.

The numerals refer to the numbers printed under the individual pictures which are nearly in serial order.

Types of nose: Dorsum sinuous, Figs. 234, 264; convex, Figs. 14, 30, 48, 60, 81, 105; straight, Figs. 11, 40, 71; concave, Figs. 3, 220, 260; root depressed, Figs. 107, 196; root prominent, Figs. 40, 93; leptorrhine Fig. 23, chamærrhine, Fig. 2.

Types of ear: Microtic, Fig. 252; macrotic, Fig. 186; helix partially rolled, Fig. 14; large interocular breadth, Fig. 112; small interocular breadth, Fig. 197; large biorbital breadth, Fig. 49; small biorbital breadth, Fig. 108; large bizygomatic breadth, Fig. 227; small bizygomatic breadth, Fig. 104.

Types of face: Leptoprosopic, Fig. 37; euryprosopic, Fig. 239; oval outline, Fig. 25; angular outline, Fig. 61; circular outline, Fig. 12; somewhat rectangular outline, Fig. 142, prognathic, Figs. 71, 75; orthognathic, Fig. 101; mandible prognathic, Fig. 193.

Types of forehead: Retreating, Fig. 24; vertical, Fig. 58; narrow, Figs. 2, 138; broad, Fig. 142; low, Figs. 161, 196; prominent molars, Figs. 57, 61, 63.

Types of lips: Procheilous, and somewhat everted, Fig. 3; upper lip, long, Fig. 99; upper lip, short, Fig. 48; ortholcheilous, Figs. 40, 54, 101; macrostomia, Fig. 120; microstomia, Fig. 175; labio-nasal sulcus, marked, Figs. 33, 108, 120; medium, Fig. 55; slight, Fig. 15; absent, Fig. 10.

Variations in amount of facial hair: pure Quichua, Figs. 14, 19, 33, 38, 52, 101, 118, 120; mixed Quichua, Figs. 124, 128, 131, 132, 137, 142, 162, 193.

Head forms: Dolichocephalic, Fig. 222; brachycephalic, Fig. 48; acrocephalic, Fig. 71; hypsicephalic, Fig. 164; chamaecephalic, Fig. 196.

Full stature, pure Quichua (holding meter rule): Shortest, Fig. 74; tallest, Fig. 205: exhibiting large legs and ankles and marked genuflexion, Figs. 11, 13, 123, 127; showing variations in proportions; Figs. 15, 23, 33, 50, 61, 72, 77, 106, 120.

Full stature, mixed Quichua: Shortest, Fig. 193; tallest, Fig. 163; other examples, Figs. 124, 130, 133; (Mongoloid features) 163, 195.

Types of Quichua women of varying ages and features: Figs. 269 to 304. Heavy type of young woman, Fig. 199. More slender type of young woman, Fig. 271 Young woman and child, Fig. 287. Old woman, short and heavy, Fig. 290. Old woman and girl, Fig. 292.

PREFACE

The material published in this paper has been gathered in the following museums:—

U. S. National Museum, Washington D. C. Abbreviated: U.S.N.M.

University of Pennsylvania Museum, Philadelphia Pa. Abbreviated: U.P.M.

American Museum of Natural History, New York N. Y. Abbreviated: A.M.N.H.

Field Columbian Museum, Chicago Ill. Abbreviated: F.C.M.

Victoria Memorial Museum, Ottawa; Geological Survey of Canada. Abbreviated: V.M.M.

Peabody Museum, Cambridge Mass.

Musée d'Anthropologie et d'Ethnographie de l'Académie Impériale des Sciences de St. Pétersbourg. Abbreviated: P.A.M.

Nationalmuseet, Copenhagen.

My best thanks are due to these institutions and their scientific staffs.

A large part of the work has been performed by my wife, Mrs. Emilie Demant Hatt; all the drawings which illustrate this paper were made by her.

My studies have been greatly forwarded by subventions from the Carlsberg Fund and from the American-Scandinavian Foundation, for which I wish to express my grateful thanks.

COPENHAGEN,
November, 1915.

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Asiatic and European moccasins 210
Transformation of moccasins 223
Origin of the moccasin group 234

MOCCASINS AND THEIR RELATION TO ARCTIC FOOTWEAR

By GUDMUND HATT

Introduction

THE term moccasin, derived from one of the eastern Algonkian dialects and used for the first time in print in John Smith's "Map of Virginia" (1612), has since come to be used for all the different kinds of North American Indian shoes. Even certain kinds of Eskimo footwear are called moccasins by some authors. I have found it convenient to use this term only for forms of footwear that have essential characteristics in common with the moccasin of the Virginia Indians. A comparative study of the types of North American footwear has led me to the conclusion that all these types cannot have originated from one common prototype. A considerable number of types, however, show such fundamental similarities to the Virginia moccasin, that there is some reason for considering them as belonging to one evolutionary group. The most important characteristics of this group are the following: The shoe is made of one or more pieces of skin, the most essential being the bottom piece which covers the foot underneath, and is bent up around the sides, gathered at the heel by a vertical seam which may be simple or, in some types, shaped as an inverted T or Y. This applies to an interesting group of types with a wide geographical distribution. While some North American types of footwear must be excluded from the moccasin group, a number of important forms, showing great similarity to certain American moccasins are found outside America, in northern Asia and Europe; moreover, these forms have played a great rôle in the evolution of arctic footwear.

The literature on moccasins is not very rich. The study of the decorative art found in the ornamentation of moccasins does not concern us here. A number of authors have occasionally

given illustrations and brief descriptions of moccasins. Different types of American moccasins have been studied by O. T. Mason,[1] by H. Ling Roth,[2] and especially by Clark Wissler in his *Material Culture of the Blackfoot Indians*,[3] where a large series of American moccasin types are described (by William Orchard) with regard to pattern. The present writer has compared certain moccasin types from America with similar types from the Amur country and from Lapland, and has shown that a large part of the footwear types used by north Asiatic tribes in all probability have been evolved from one common prototype, a moccasin combined with a legging. While, on the other hand, the Eskimo types of footwear and certain types used in northeastern Asia as well as some western Siberian and central Asiatic types cannot have been derived from any moccasin.[4] As my papers on the subject have been published in Danish only and as subsequent studies in American museums have considerably augmented my material, I feel justified in taking up the subject again.

I

North American Moccasins

A study of the footwear of North America reveals a considerable number of different types. In an attempt to discover the evolutionary relations between these types, it will first be necessary to arrange them in definite series based upon the main characteristics of the moccasin patterns. In each of the following twenty-one series are placed forms, so essentially similar in pattern that they may safely be regarded as variations of one type. Afterwards we shall be able to point out fundamental similarities and intermediate forms between certain series, indicating that they have been evolved from one common prototype.

---

[1] "Primitive Travel and Transportation," *Report United States National Museum*, 1894. Washington, 1896.

[2] "Moccasins and Their Quill Work," *Journal of the Royal Anthropological Institute of Great Britain and Ireland*, vol. xxxviii. London, 1908, pp. 47–57.

[3] *American Museum of Natural History, Anthropological Papers*, vol. v., part i. New York, 1910, pp. 140–151.

[4] *Mokkasiner. Geografisk Tidskrift*, 22. B. H. v. Copenhagen, 1914, pp. 172–182; *Arktiske Skinddragter*, Copenhagen, 1914, pp. 168–172, 196–207 and 219–229.

The Virginia moccasin was made of one piece of skin gathered by means of a seam along the upper side of the foot and another along the heel. Part of the skin formed a loose flap on each side, reaching a few inches up on the leg and fastened around the ankle by means of strings, or the moccasin was drawn together like a purse around the ankle.[1] This type ought to be placed first, not only because it is that type to which the term moccasin originally belongs, but also because it is the least complicated of all moccasin types.

SERIES I. MOCCASINS OF ONE PIECE, WITH STRAIGHT HEEL SEAM AND TOE SEAM

This series contains a number of varieties, distinguished mainly by differences in the form and extent of the top or ankle flaps, and in the height of the heel seam and the length of the toe seam.

Fig. 4 (1890, IX/1 P.A.M.) is a moccasin from the Muskogi, consisting of a piece of yellow-brown buckskin, cut as the attached pattern and gathered by a straight heel seam and straight toe seam, sewn by means of a narrow strip of buckskin instead of thread. The anterior part of the moccasin is turned up around the end of the foot and laid in folds and wrinkles, radiating from the lower end of the toe seam. At the lower end of the heel seam the buckskin is similarly drawn together and laid in folds. The side flaps are connected behind by means of the upper part of the heel seam, and form a sort of boot top; the anterior parts of the flaps are free and may be laid over each other and secured by means of the ankle band, which is a narrow strip of buckskin put through two holes near the upper end of the toe seam.

The Alibamu Indians of Texas use moccasins varying only slightly from this form (2/6771, 2/5480 and 2/6772 U.P.M.). The Seminole also use a similar moccasin (19398 F.C.M.), the form of the foot, however, being particularly long, ending flat and almost square; in the example mentioned, the upper part is covered with black cloth and beaded. An infant's moccasin from the Seneca in Oklahoma (1/9557 U.P.M.) is of a pattern similar to fig. 4; the top has two long and pointed anterior flaps.

[1] W. R. Gerard, "Virginia Indian Contributions to English," *American Anthropologist* (N.S.) vol. 9, p. 97.

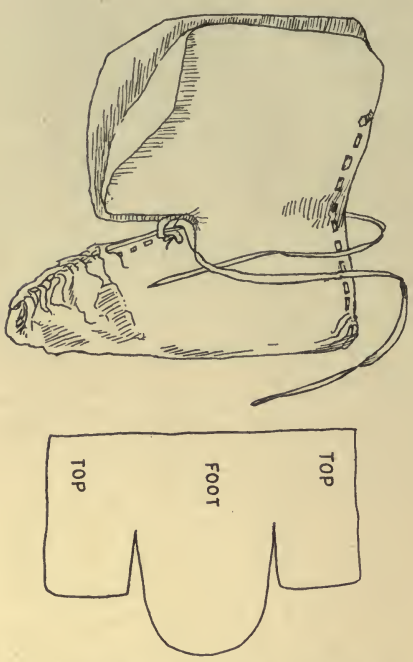


FIG. 4.—Muskogi moccasin. (P. A. M.)

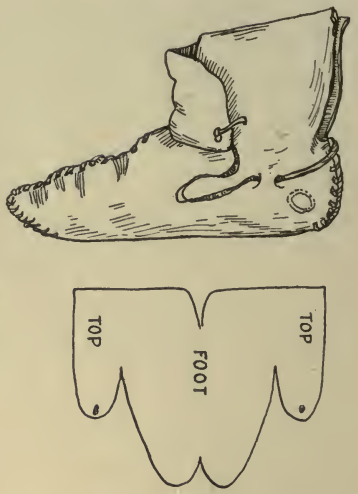


FIG. 5.—West Virginia, hunter's moccasin. (U. S. N. M.)

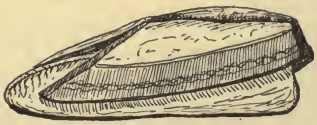


FIG. 6.—Miami moccasin. (U. P. M.)

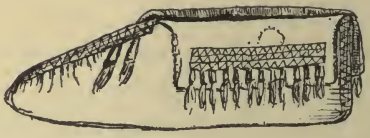


FIG. 7.—Moccasin from Canada. (P. A. M.)

A hunter's moccasin (fig. 5, 178468 U.S.N.M.), Morgantown, West Virginia represents a form which should be placed close to fig. 4. The main difference is that heel seam and toe seam are carried around the heel and the toe, reaching down on the under side of the foot, a device by which the puckering at toe and heel is avoided. The heel seam does not reach up through the top which is open behind and provided with two rounded anterior flaps laid over each other and held in place by means of two ankle bands.

The sewing is done by means of a leather string instead of thread. The material for this moccasin is commercial tanned leather; the grain is turned inside as usual in moccasins of bought material. The reason for this is evidently that the flesh side of the leather bears somewhat more resemblance to Indian buckskin. A pattern quite similar to that of fig. 5 is found in a pair of child's moccasins from the Comanche, Oklahoma (2/1297 U.P.M.), the material being buffalo hide with the hairy side inward.

Fig. 6 (2/7956 U.P.M.) is a moccasin from the Miami Indians, made of one piece of buckskin. It differs from fig. 4 mainly in one point: the side flaps do not form a top-like part, but hang down, decorated with embroidery. The anterior part of the moccasin is puckered around the toe seam, as in fig. 4. At the lower part of the heel seam, however, the buckskin is not puckered, but the cone-shaped point of the heel is turned in and secured by a few stitches. This may be taken as a beginning of the T-shaped heel seam which is found in a large number of more highly developed moccasin types. Similar forms are used by the Potawatomi of Kansas and Oklahoma (2/7615 and 2/4731 U.P.M.), by the Delaware of Oklahoma (2/2421, upper side covered with bead embroidery, U.P.M.), the Quapaw (1/9989 U.P.M.), the Peoria (1/9991 U.P.M.), the Kickapoo (2/4982, 2/5482, 2/5484 U.P.M.), the Caddo (2/2192, 2/2179 U.P.M.; 6987, 6986 U.S.N.M.; 59368 F.C.M.), the Shawnee (261714 U.S.N.M.), and the Sauk and Fox (2/7901 U.P.M., and eleven pairs in F.C.M.). Characteristic of these forms are the side flaps, the anterior parts of which are pointed. These side flaps serve only decorative purposes and are often covered with embroidery, but are evidently homologous with the top extensions of figs. 4 and 5. Peculiarly long and pointed are the anterior flaps in some Caddo moccasins. Variation is also found in the heel seam which may be straight and simple with puckering towards the lower part (in Caddo, Shawnee, Delaware, Quapaw, Peoria, and some Kickapoo and Potawatomi moccasins); or from the lower part of the heel seam may protrude two trailers, cut from the edges which are brought together in the heel seam (in Sauk and Fox, and in some Potawatomi and Kickapoo moccasins). These trailers, united at their base, serve probably as a

sort of decoration, but have also in a way practical significance, as the cutting of these strips gives a rounding to the lower part of the heel and does away with the undesirable conical projection which in other cases is prevented by puckering or by the T-seam (*cf.* fig. 8, where similar trailers are found). In the Peoria and Quapaw moccasins of this type is observed the peculiarity that a narrow gore (about two cm. broad by eleven cm. long) is inserted in the toe seam. This perhaps might be considered as a fore-

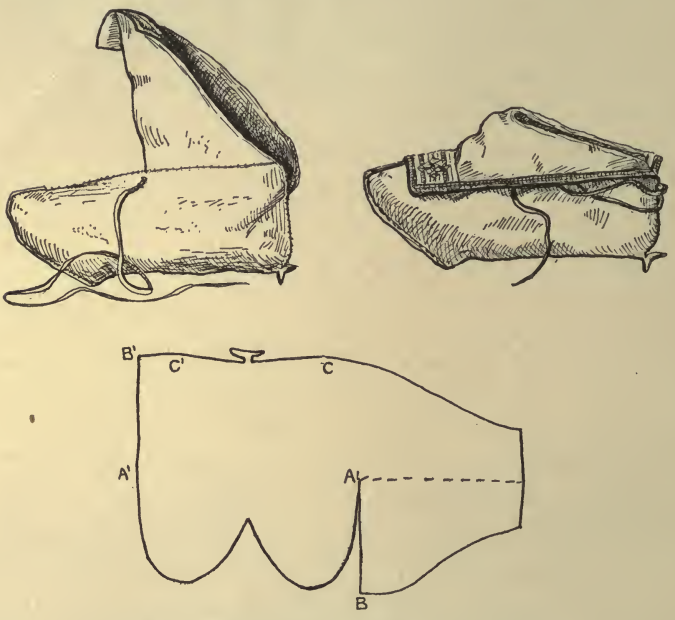


FIG. 8.—Winnebago moccasin. (U. P. M.)

runner to the broader "tongues" or instep-pieces which we shall find in more highly developed types.

Close to the form represented in fig. 6 should be placed the moccasin, fig. 7 (1900/1 P.A.M.), supposed to have been brought from Canada in 1849 by the Russian collector, Wosnessenskij. It is almost identical with two moccasins in U.P.M. (3/2887 and 3/6411), supposed to have come from the Chippewa (the last one will be mentioned again, because of its heel seam which shows a

beginning of the T-shape). The ankle flaps in this moccasin differ from fig. 6, being cut square without the pointed anterior parts. The flaps are decorated with quillwork and red-colored hair tufts in metal cones and the toe seam and heel seam are likewise decorated with quillwork. Similar is a woman's moccasin from the Ojibwa (1/1141 U.P.M.), decorated with quillwork, but without the cone-like pendants. A narrow piece of buckskin is inserted in the heel seam. This, however, is no important variation as it occurs sporadically in different types of moccasins and evidently is caused by lack of material. A similar form is also found in a woman's moccasin (1/1145 U.P.M.), from the Mohegan Indians. The ankle flaps, however, are here made of cloth and covered with silk and bead embroidery; and the heel, with straight seam, but without gathers or puckerings, forms a pointed cone below, which is turned

FIG. 9.—Lillooet moccasin of fishskin. (F. C. M.)

inside. A similar pattern, but without ankle flaps, is possessed by a moccasin from the Niantic Indians, Connecticut (3/5666 U.P.M.).

A peculiar subtype is represented in fig. 8 (8868 U.P.M.), a Winnebago moccasin made of light-brown buckskin. In the pattern some similarity to fig. 5 should be noted. The part covering the foot is cut with two rounded anterior flaps, from which follows that the toe seam runs over the end of the foot and reaches the under side so that puckering of the buckskin is avoided. From the lower part of the heel seam protrudes a double trailer, cut from the edges of the buckskin which gives a convenient rounding to the heel. Characteristic is the top or ankle flap, which may be described as follows: there is only *one* ankle flap, but very large, with a considerable anterior extension which is bent over (around the dotted line) and sewed to the other side of the foot opening (a is joined to a', b to b', and c to c'). In fig. 8 the ankle flap is

raised, to show the ankle band which goes through two holes near the anterior end of the foot opening. In fig. 8 also, the ankle flap decorated with bead embroidery is shown in its regular position, falling over and covering the foot. This moccasin form is so far only known from the Winnebago (2/3231 U.P.M., 69309, and 15112 F.C.M. are Winnebago moccasins of the same type).

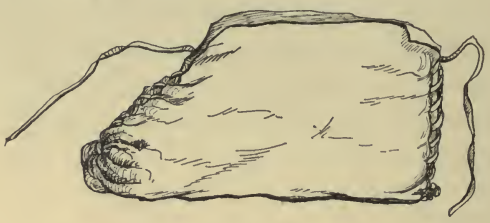


FIG. 10.—Nootka moccasin. (V. M. M.)

Series I, on the whole is very rich in variations, but at the same time it contains the least complicated patterns. Figs. 9, 10, and 11 show the simplest forms that have come to my notice. Fig. 9 is a moccasin from the Salishan Lillooet (111774 F.C.M.).

FIG. 11.—Ceremonial moccasin, Osage. (U. P. M.)

It consists of one piece of fishskin, gathered around the foot by means of a heel seam and a toe seam, both of which are sewed with skin strips, the heel seam from the outside and the toe seam from the inside. The belly part of the skin comes under the foot. The lower part of the heel protrudes conically. By means of the ankle band which is put through a series of holes near the rim, the anterior part of the moccasin is drawn tightly over the foot. Fig. 10 (VII. F. 49. V.M.M.) is a very simple moccasin from the Nootka Indians. It is made of one piece of skin, rather thin and dehaired, which is

put around the foot and held in shape by means of a straight heel seam and straight toe seam, both sewn with skin strips, the upper ends of which probably serve as ankle bands. Still more primitive is the form shown in fig. 11, a very rude moccasin, part of the special costume worn by certain officials in the war bundle ceremonies of the Osage (2/845 U.P.M.). It is made of an irregular square piece of buffalo skin, the hairy side being inward. Two edges of the skin are joined by the extremely crude toe seam which is sewed by means of a rough piece of sinew, put through four pairs of holes in the skin. The opposite corner of the skin is turned in and two pairs of holes indicate the place for a heel seam which would be as crude as the toe seam. Although this form belongs to a ceremonial dress and is not intended for any kind of practical use, it might indicate a reminiscence of an old type of footwear; and that is the more interesting because no other Osage moccasin, as far as I am aware, belongs in series I. The Navajo, who in daily life wear shoes with rawhide soles use in a religious dance a peculiar moccasin which also belongs to our series I as it consists of one piece of skin with straight heel seam and toe seam, heel and toe both running out in long pointed peaks.[1] Although the Navajo according to their own mythical conceptions originally wore shoes or sandals of grass or yucca, it might be reasonable to suppose that the pattern of this ceremonial moccasin is a reminiscence of an old type of footwear. This supposition is confirmed by the historical fact that the Apache until the middle of the eighteenth century wore small boots or shoes made of one piece of skin according to Miguel Vanegas (1758).[2]

SERIES II. MOCCASINS OF ONE PIECE WITH T-SHAPED HEEL SEAM AND STRAIGHT TOE SEAM

Fig. 12, a Cherokee moccasin, from North Carolina (130478 U.S.N.M.), may serve as a typical example of this series which is not very rich. The moccasin is made of one piece of tanned groundhog skin, sewn with thongs of squirrel skin. It will be

[1] A. M. Stephen, "The Navaho shoemaker," *Proceedings U. S. National Museum*, vol. XI. Washington, 1889, pp. 133–134, Fig. 3.

[2] Cited by A. G. Morice in *Anthropos*, II, p. 2.

noticed that the pattern of this moccasin reminds one strongly of the patterns given in fig. 4, the most important difference being found in the heel seam which here is formed like an inverted T. Two parallel incisions are made in the skin at *a* and *b*, the edges *dc* and *d'c'* are joined in the vertical part of the heel seam and the flap between the incisions at *a* and *b* is turned up and sewn on by the horizontal part of the heel seam. At the upper end of the heel seam a leather rosette is sewn on as decoration. The skin is gathered with fine puckerings to the straight toe seam, as in figs. 4, 6, and 7. The ankle flaps are not decorated and stand upright like a short bootee top; on each side an ankle band is attached. Similar moccasins from the Cherokee of North Carolina are found in University of Pennsylvania Museum. A child's moccasin from the Ojibwa in Minnesota (154319 U.S.N.M.) has a somewhat similar pattern, but without any ankle extensions. The toe seam, however, here reaches the under side of the foot because the anterior part of the moccasin is cut about as in fig. 5.

In the moccasin fig. 6, was noticed a tendency toward the T-shaped heel seam as the projecting part of the heel seam was turned inward and secured with a couple of stitches. A more decided step towards the T-seam was found in the Chippewa moccasin (3/6411 U.P.M.), similar to fig. 7, where in order to avoid the pointed heel, the vertical heel seam is not carried all the way down and the small opening left is closed by a very short horizontal seam, only 1.8 cm. sewn with a special little skin thong. As the cut itself is not in these forms influenced by the T-seam, they must be put in series I. They should, however, probably be taken as indications of the origin of the T-seam. In an Iroquois moccasin from the Grand River reservation, Canada (1/1739 U.P.M.) very similar to fig. 7, is the T-shaped heel seam with a horizontal part not much longer than in the before-mentioned Ojibwa moccasin; the pattern, however, is cut like fig. 12, with incisions for the horizontal part of the heel seam, and accordingly this form should be placed in series II.

SERIES III. MOCCASINS OF ONE PIECE WITH STRAIGHT HEEL SEAM AND T-SHAPED TOE SEAM

Of this series only three moccasins have been observed, constituting, however, two distinct forms.

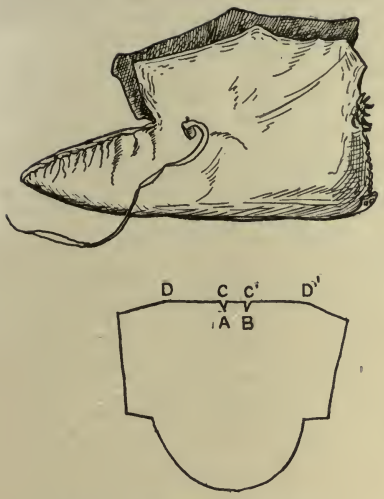


FIG. 12.—Cherokee moccasin. (U. S. N. M.)

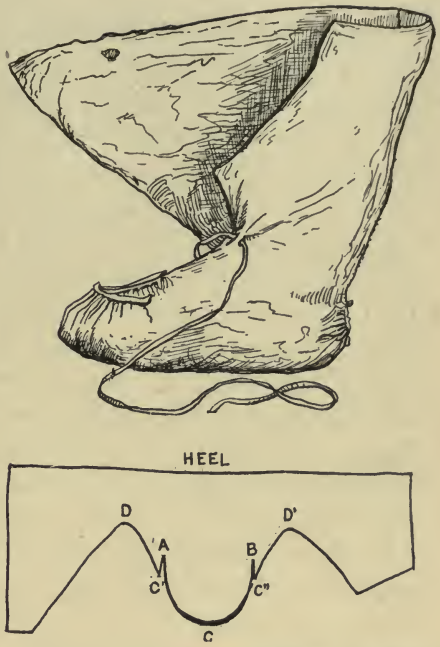


FIG. 13.—Chitimacha moccasin. (U. P. M.)

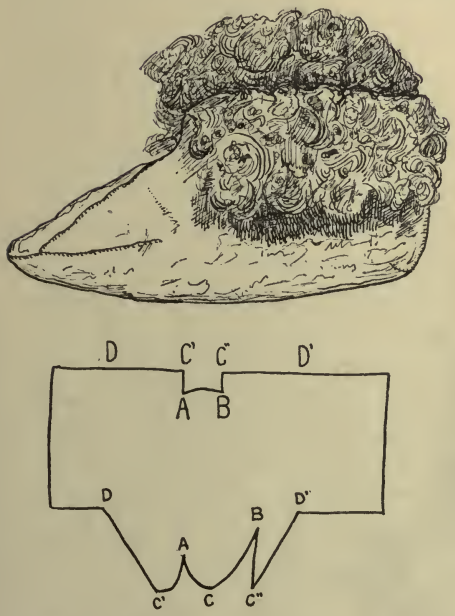


FIG. 15.—Kiowa "medicine moccasin." (U. S. N. M.)

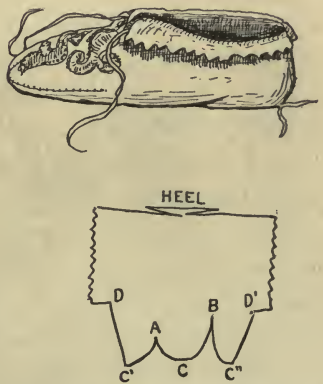


FIG. 14.—Sauk and Fox moccasin. (U. P. M.)

Fig. 13 is a moccasin from the Chitimacha Indians, Bayou Teche, Louisiana (76786 U.P.M.). It is made of one piece of yellowish buckskin and sewn with narrow strips of buckskin. The heel is rounded by means of gathers around the lower part of the heel seam. The upper part of the heel seam unites the ankle flaps, which form a sort of boot top. The toe seam is very peculiar, a highly developed T-seam, where the middle flap, *abc*, is unusually large and rounded, being turned up over the end of the foot and with a considerable number of gathers sewed to the horizontal part of the T-seam (*c*, *c'*, and *c''* are brought together). An ankle band is drawn through holes in front.

Another phase of the T-shaped toe seam may be observed in fig. 14, a moccasin from the Sauk and Fox in Oklahoma (2/6415 U.P.M.), where the two horizontal branches of the T-seam are decidedly unequal in length whereby an unsymmetrical form is produced. The heel seam of this moccasin is straight but from the lower part of it extends a trailer like the one described under fig. 8. The same pattern as in fig. 14 is found in a Pawnee moccasin (59446 F.C.M.).

SERIES IV. MOCCASINS OF ONE PIECE WITH T-SHAPED HEEL SEAM AND T-SHAPED TOE SEAM

Only one moccasin has been observed belonging to this series, a rather interesting form, shown in fig. 15 (152962 U.S.N.M.). James Mooney, who collected it among the Kiowa, informs me that it is an old and very rare form which was used by an old man. The Kiowa called it a "medicine moccasin," which, however, according to James Mooney, in this case only would indicate that they considered it a very old and rare type. This moccasin is made of one piece of buffalo hide, the hairy side turned inward, cut as the pattern shows. The heel seam has the regular T-shape, the heel flap between *a* and *b* is cut away. The toe seam has an irregular, unsymmetrical T-shape, which gives the footing an unsymmetrical form like the moccasin in fig. 14. Of the ankle flaps, the outer one is larger than the inner one.

SERIES V. MOCCASINS CONSISTING OF MORE THAN ONE PIECE (FOOT PIECE OR BOTTOM, INSTEP PIECE OR TONGUE, AND, EVENTUALLY, A TOP PIECE); THE BOTTOM HAVING STRAIGHT HEEL SEAM AND STRAIGHT TOE SEAM

This series is not very extensive, only four specimens have been studied, constituting, however, two distinct types.

In a moccasin from the Flathead Indians, Washington (9059 U.S.N.M.), the heel seam goes around the heel, reaching down on the under side of the foot, as in fig. 5, the toe seam, however, only reaches to the end of the foot. In fig. 16 a moccasin of thick smoked buckskin (moose) from the upper Yukon, Alaska (260654 U.S.N.M.), the bottom is cut very much like the middle or lower part of the moccasin in fig. 5, the heel seam and the toe seam both stretching down under the foot, whereby any puckering is avoided. The tongue, decorated with bead embroidery, has its rounded anterior part sewn on to the bottom piece (*c* being joined to *c'c''*, *d''* to *d'*, and *d'''* to *d*), so that the tongue covers part of the foot. The free posterior end of the tongue which is here pointed covers part of the ankle. The top is open in front. There are two ankle bands, sewn to the inner side of the tongue and put through a hole in the top piece on each side.

In fig. 17 (VI. M. 395 V.M.M.) is shown a man's moccasin from the Ntlakyapamuk Indians (Upper Thompson River). It is made of three pieces of buckskin, has a straight heel seam and straight toe seam, and belongs accordingly to our series V. The bottom is, however, cut differently from fig. 16. It consists, as the pattern shows, of a rectangular piece, and the shape of heel and toe is produced by puckering. The instep piece is laid double and the bottom is sewn on to the instep piece with a considerable number of gathers. The ankle bands, one on each side, are made of Indian hemp. In a moccasin (16/8663 A.M.N.H.) of the same style from the Upper Thompson, the bottom and instep pieces are made of marmot skin, hairy side in.

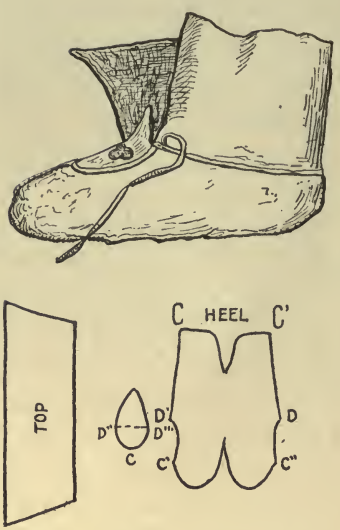


FIG. 16.—From Upper Yukon. (U. S. N. M.)

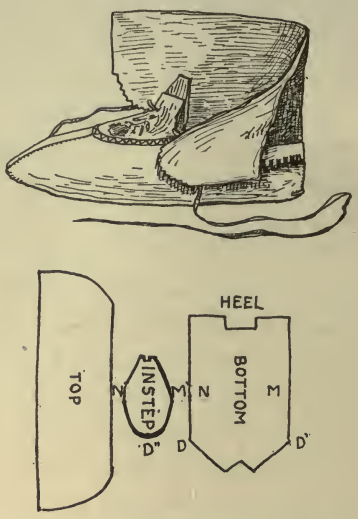


FIG. 18.—Yellow Knives. (V. M. M.)

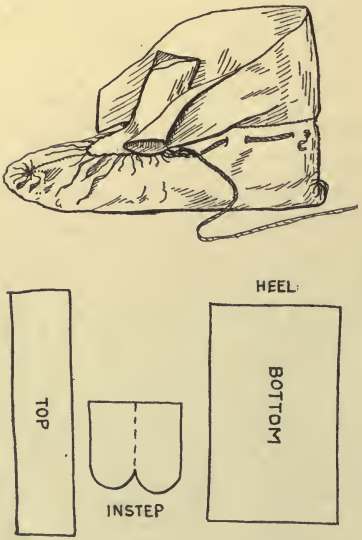


FIG. 17.—From Upper Thompson River (V. M. M.)

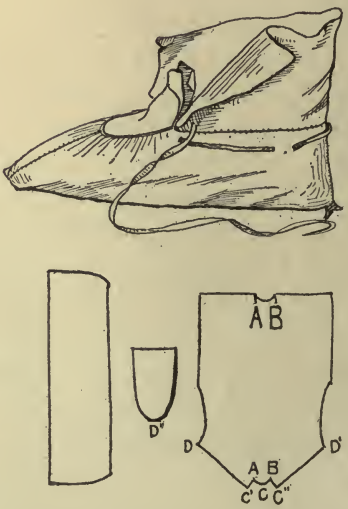


FIG. 20.—Kutenai. (U. S. N. M.)

SERIES VI. MOCCASINS CONSISTING OF MORE THAN ONE PIECE; THE BOTTOM HAVING T-SHAPED HEEL SEAM AND STRAIGHT TOE SEAM

This series has a considerable geographical distribution, being used by many northern Indian tribes. Mason has called it the Athapascan type,[1] because it is so very common among the northern Athapascan tribes. It is, however, also found in the northern part of the Eastern Woodland area and occasionally in other areas. In spite of its wide distribution and numerous occurrence, this type varies only inconsiderably.

Fig. 18 shows a typical example (VI. B. 8 V.M.M.), from the Yellow Knives; the bottom has a T-shaped heel seam, the heel flap being cut away. The toe seam is straight and reaches a little way down on the under side of the foot. As the anterior corners of the bottom piece, otherwise rectangular, are cut away, it can be joined to the tongue without any gathers, *d''* being joined to *dd'*, *m'* to *m* and *n'* to *n*. The ankle band goes around the heel and is put through several holes near the upper rim of the bottom piece, and lastly through the tongue and top on each side; it is partly covered by a strip of thin buckskin which, for decorative purpose, is sewn into the seam between top and bottom. A considerable number of moccasins of this type have been examined, varying only in minor details; many are decorated with embroidery on the tongue. The heel flap, absent in some, is present in others, and may be cut into trailers. This type is exceedingly common among the northern Athapascan tribes. The United States National Museum has a considerable number of examples from the Kutchin Indians of the Yukon river district (7613, 166962, 166965, etc.; *cf.* Mason, *Primitive Travel*, etc., p. 347, fig. 56). The Victoria Memorial Museum has many examples of this moccasin type from the Slavey (VI. D. 11, 12 and 20–24), the Yellow Knives (VI. B. 8–10), the Dogrib (VI. C. 9, 11, 12, 14, 18, 19, 20, 24, 29 and 32), Chipewyan (VI. A. 1, 2, 5, 9, 10, 12, 17), and Tahltan (VI. H. 34, 43 and 44). It is, however, also known, although less commonly used, in the northern part of the Eastern Woodland area, *e. g.*, among the Ojibwa (959/16 P.A.M.),

[1] Mason, *Primitive Travel*, etc., p. 355.

the Huron (24781 U.S.N.M., and 2/3142 U.P.M.), the Oneida (151388 U.S.N.M.; top very low and covered with bead embroidery), and the Potawatomi (2/7616 U.P.M.); and the same type may even be found in the Plains among the Dakota (8362, 13143, and 21670 [Santee Sioux] U.S.N.M.), in the Basin area among the Ute (200396 U.S.N.M.), and at Puget Sound among the Skokomish (19638 F.C.M.). In a moccasin from the Salishan Flathead in Montana (111692 F.C.M.) the toe seam reaches only to the end of the foot.

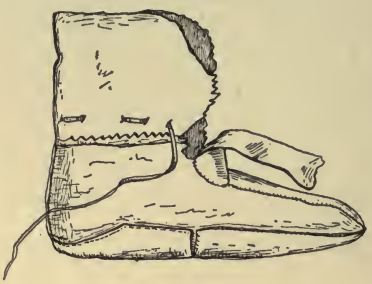


FIG. 19.—Klamath moccasin. (U. S. N. M.)

In fig. 19 is given a variety of this style, from the Klamath Indians of Oregon (24073 U.S.N.M.) with the following peculiarities: the instep piece or tongue has a long free flap, but covers proportionately very little of the foot; the ankle band is put through a series of holes in the top piece, not, as usual, in the bottom piece; patches are sewn on the under side. This, however, is quite common in all moccasin types.

From the Huron at Loretto comes a peculiar variety (III. H. 5 V.M.M.) where the toe seam is rather short and closed at the end with much puckering, as in fig. 17; the bottom piece is cut rectangular as in fig. 17, but has a T-shaped heel seam.

SERIES VII. MOCCASINS CONSISTING OF MORE THAN ONE PIECE; THE BOTTOM HAVING STRAIGHT HEEL SEAM AND T-SHAPED TOE SEAM

This is a very rare type. Only one example has come under observation, a moccasin from Warm Spring reservation, Oregon (285118 U.S.N.M.). It consists of a bottom of heavy smoked

buckskin, a tongue covered with black cloth and bead embroidery and a top of thinner buckskin.

SERIES VIII. MOCCASINS CONSISTING OF MORE THAN ONE PIECE; THE BOTTOM HAVING T-SHAPED HEEL SEAM AND T-SHAPED TOE SEAM

This type is described by Mason and termed "Algonquian type."[1] It seems to be especially common among the Algonkian tribes of Labrador, but it is also used by the northern Athapascan tribes and by the Tlingit and is occasionally found even as far south as the Kutenai in Idaho, the Shoshoni in Wyoming, and the Ute in Colorado. In spite of this wide range of distribution, the type is remarkably stable, although some interesting variations occur.

As an example of these see fig. 20 (176324 U.S.N.M.), a buckskin moccasin from the Kutenai, Idaho. The bottom piece is gathered with fine tucks to the seam which connects it with the instep piece. These gathers are more numerous and deeper in many other examples of this type where the anterior corners of the bottom piece are not, as in the present case, cut away. In consequence, this Kutenai moccasin is considerably narrower and less baggy in its anterior part than, *e. g.* Nascapee moccasins of the same general type.[2] The instep piece, as shown in fig. 20 is double, consisting of two layers of buckskin, the outer layer decorated with some strands of red and green colored horsehair, sewed on along the instep seam. In most cases, however, the instep piece consists only of a single layer. The ankle band is drawn through holes in the bottom piece and in front through the top piece. In most examples of this type the ankle band is also drawn through the instep piece. The shape of the heel flap, between *a* and *b*, varies also. The United States National Museum has a considerable number of moccasins of this type from the Nascapee Indians of the Ungava district (90070, 90076, 90078, 90080, etc.), and also several examples from the Athapascan tribes of Alaska (11386, 20816, 20817, 74435, 175230)

[1] Mason, *Primitive Travel*, etc., p. 355.

[2] Turner, Lucien M., "Ethnology of the Ungava District," *Eleventh Annual Report Bureau of Ethnology*, fig. 92.

and from the Tlingit (209579, and 20796 from Sitka) and an example from the Blackfoot, Saskatchewan (674). This moccasin type is also known from the Tsimshian (53140 F.C.M.), the Salish Okinagan of British Columbia (85783 F.C.M.), the Thompson River Indians (VI. M. 131. V.M.M.), and the Skokomish, Twana, Washington (19638 F.C.M.). A moccasin of this type from the Shoshoni, Wyoming (165148 U.S.N.M.) has the peculiar trait that a rectangular flap protrudes from the horizontal part of the toe seam. In a moccasin from the Ute, Colorado (10778 U.S.N.M.) the horizontal part of the toe seam is extremely short. In other forms, not uncommon among the Huron and the Iroquois, the horizontal part of the toe seam has taken such development that a remarkable subtype has arisen.

Fig. 21 (III. I. 410 V.M.M.), a moccasin from the Iroquois of the Lake of Two Mountains, represents this subtype fully developed. The median part of the toe seam is very short, the horizontal part, on the other hand, comparatively long; the rounded flap between *a* and *b* in the pattern is crimped and sewn unto *ac'bc''*, *c* being joined to *c'* and *c''*, whereby the horizontal part of the toe seam is formed. This brings the horizontal part of the toe seam up on top of the foot. It will be noticed that the bottom piece of the moccasin has a pattern very similar to the lower part, fig. 13, which, however, has a straight heel seam. The bottom is, with a considerable number of gathers, sewn to the instep piece or tongue. A narrow strip of buckskin is sewn into the seam between bottom and top, and a loop is sewn into the anterior part of this seam for the ankle band. The T-shaped heel seam has no trailers; the heel flap is simply rounded, bent up, and secured by sewing. Similar moccasins are used by the Huron.[1] Less extreme forms, with the horizontal part of the toe seam nearer to the end of the foot, showing closer affinity to the main type represented in fig. 20, are known from the Abenaki (III. J. 6 V.M.M.), from the Tahltan (VI. H 35 V.M.M.), and from the Kutchin of Teslin lake (VI. G. 109 V.M.M.).

[1] F. G. Speck, "Notes on the Material Culture of the Hurons," *American Anthropologist*, (N.S.) vol. 13, fig. 22.

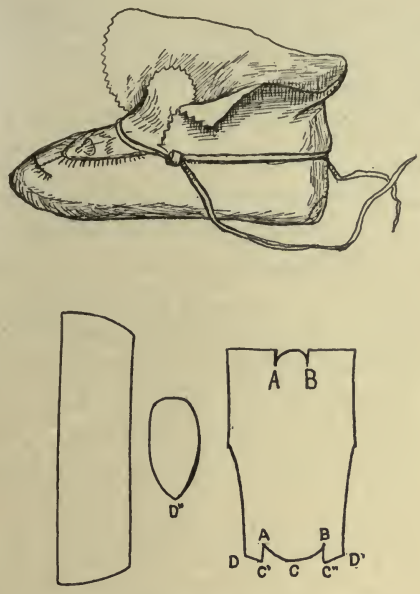


FIG. 21.—Iroquois, Lake of Two Mountains. (V. M. M.)

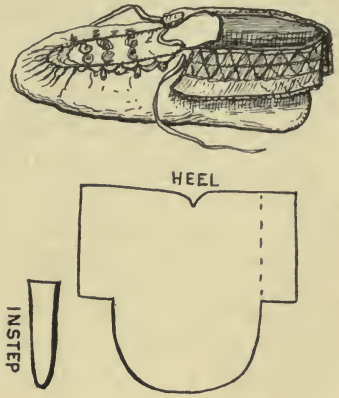


FIG. 22.—Cayuga moccasin. (V. M. M.)

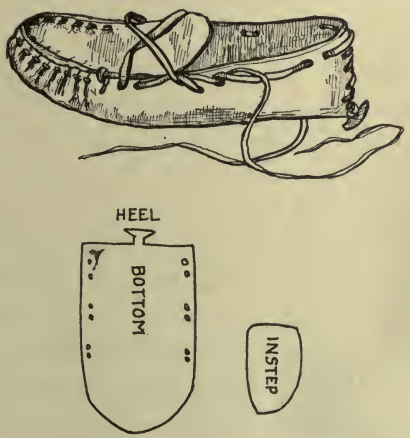


FIG. 23.—Penobscot moccason. (U. P. M.)

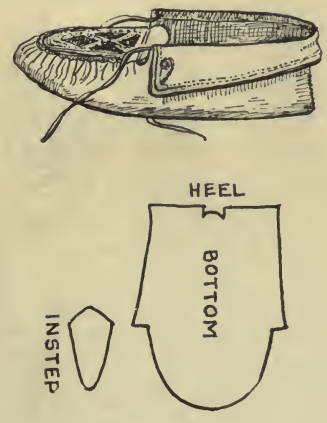


FIG. 25.—Mohegan moccasin. (U. P. M.)

SERIES IX. MOCCASINS CONSISTING OF MORE THAN ONE PIECE; THE BOTTOM HAVING STRAIGHT HEEL SEAM AND NO TOE SEAM, BEING BENT UP OVER THE END OF THE FOOT AND SEWN TO THE TONGUE WITH MORE OR LESS PUCKERING

This series is not rich in forms and occurs only rarely. It is, however, of some interest from an evolutionary point of view.

Strictly speaking, the Peoria and Quapaw moccasins mentioned under series I as similar to fig. 6 (1/9991 and 1/9989 U.P.M.) should belong here. The tongue-like piece has, however, in those moccasins the character of a very narrow gore, and the general appearance of these forms suggests a very close affinity to fig. 6, although it seems quite reasonable to suppose that the tongue or instep piece in more highly developed forms originated from such a narrow gore inserted in the toe seam.

A very narrow tongue, almost gore-like, but still a fully developed instep piece, ornamented with beadwork, and with a free upper end is shown in fig. 22 (III. I. 534 V.M.M.), a Cayuga moccasin. It has, as the pattern indicates, a bottom piece, cut somewhat like the pattern to figs. 4 and 7, although the ankle flaps are less extended, and the heel is cut very much like the corresponding part of the pattern to fig. 5. In order to make the moccasin fit more closely to the foot, a longitudinal fold is sewn in under the arch of the foot.

A well-developed and comparatively broad tongue is found in a doll's moccasin from the Kutchin Indians of Teslin lake (VI. G. 151 V.M.M.). This moccasin is moreover provided with a top piece, like the fully developed forms of series V to VIII. I have, however, not noted any such form for actual use.

A special subtype, belonging to this group, is represented in fig. 23 (2/5871 U.P.M.), a moccasin from the Penobscot of Maine. It is made of heavy, tanned, commercial leather, and consists of two pieces, as shown in the pattern. The bottom piece has a straight heel seam; the protruding heel flap has a triangular form, suggestive of the trailers in fig. 8, but quite different from these, as it does not serve to give any rounding to the lower part of the

heel. This heel flap evidently does not serve any practical purpose in the present form. The tongue or instep piece has a characteristic unsymmetrical form which makes the whole moccasin unsymmetrical. The ankle band is put through three pairs of holes on each side near the upper rim of the bottom piece. Of similar cut, but with symmetrical instep piece is (III. K. 21 V.M.M.) a small moccasin from the Penobscot. Moccasins quite similar to fig. 23 are also known from the Malecite (III. E. 6 and III. E. 8 V.M.M.).

SERIES X. MOCCASINS CONSISTING OF MORE THAN ONE PIECE; THE BOTTOM HAVING T-SHAPED HEEL SEAM AND NO TOE SEAM, BEING BENT UP OVER THE END OF THE FOOT, AND SEWN TO THE TONGUE OR INSTEP PIECE WITH MORE OR LESS PUCKERING

This is a very important type, found widely distributed among the northern Indian tribes. The term "Tlingit type," which Mason uses, has no value, as this type is fully as much used by several other tribes as by the Tlingit. Mason's "Iroquoian pattern" also belongs to this general type which varies somewhat more than the types VI and VIII; these together with X are the most important northern moccasin types. Considerable interest is added from the fact that moccasins of this type are widely distributed outside of America, as is shown in the following section.

A typical example of this series is represented in fig. 24 (VI. H. 36 V.M.M.), a moccasin from the Tahltan Indians. Bottom and tongue are made of smoked, heavy buckskin; the top is made of coarse linen. A strip of red cloth is sewn into the seam between bottom and tongue. An ankle band, fastened by means of a knot on each side, is drawn through holes near the upper rim of the bottom piece. The heel flap, protrudes from the horizontal part of the heel seam. According to Emmons, the Tahltan have borrowed this moccasin from the Kaska.[1] The Museum of the Imperial Academy of Sciences of Petrograd has a moccasin of the same type from the upper Stikine river (960/12).[2] It is also known from Sitka (20797 U.S.-

[1] G. T. Emmons, "The Tahltan Indians," *University of Pennsylvania. The Museum Anthropological Publications*, vol. IV, 1. Philadelphia, 1911, p. 43 and fig. 6b.

[2] *Cf.* my article *Mokkasiner*, fig. 5.

N.M.),[1] and it is used by the Tsimshian along the Upper Skeena river (A. 18123 F.C.M., made of unsmoked white buckskin). This same type with only very slight variations seems to be quite widely used in the northern part of the Eastern Woodland area, *e. g.*,

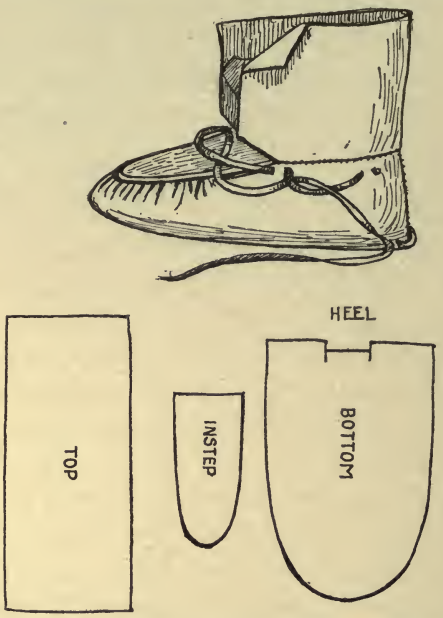


FIG. 24.—Tahltan moccasin. (V. M. M.)

by the Montagnais of Lake St. John (2/8934 and 2/8943 U.P.M.). From the last-mentioned tribe a child's moccasin has the bottom and the anterior part of the instep piece made of sealskin with the hair removed. In a moccasin from the Bersiamite, subtribe of Montagnais, Lake St. John (2/8940 U.P.M.), the anterior part of the instep piece is somewhat narrow and pointed, and the anterior turned-up part of the bottom is gathered by an unusually large number of crimpings, which produces a form less baggy and round-toed than usual in this type. The Nascapee of the Ungava district use this pattern especially for children's footwear (90063, 90067, 90068, etc. U.S.N.M.), but may also use it for the footwear of

[1] Mason, *op. cit.*, fig. 59.

grown-up persons (III. B. 16 and 17 V.M.M.). The Labrador moccasins of this type generally have no "trailers," as the heel flap is turned up and secured by sewing. This applies also to examples from the Seneca of Cattaraugus reservation (1856 U.P.M.), the Mohawk of St. Regis reservation (III. I. 25 V.M.M.), and the Mistassini (III. B. 10 V.M.M.). The type is also used by the Huron[1] (three examples in V.M.M.). A moccasin (9973 U.P.M.) from the northern shore of Lake Superior, collected about 1830, is of the same pattern as fig. 24 and has a protruding heel flap, cut into two short "trailers."

More common in the northern part of the Eastern Woodland is the subtype which Mason has termed "Iroquois pattern"; it differs from fig. 24 mainly in one point: the top is very much reduced in size, or entirely lacking which gives the moccasin a slipper-like appearance. As an example we may take fig. 25 (3/5663 U.P.M.), a moccasin from the Mohegan Indians, Connecticut; it consists of bottom and bead embroidered tongue of buckskin, cut as indicated in the pattern, the bottom having small ankle extensions. Inside, the moccasin is lined with linen. In many museums are found moccasins of this type from the Iroquois (24785 and 210045 U.S. N.M., 1/620 and 2/3096 U.P.M., III. I. 328 and III. I. 738 V.M.M.); generally heavy beadwork in flower designs covers the tongue and the low top which in most cases is made of velvet, cloth, or silk. The inside is usually lined and the whole fabric often has the appearance of having been made for sale. The pattern itself, however, is unquestionably old. Several neighboring tribes also make moccasins of that type. Examples have been studied from the Huron (several specimens in V.M.M.), the Penobscot of Maine (2/5798 U.P.M.), the Micmac (several specimens in V.M.M.), and the Montagnais of Seven Islands and Lake St. John (III. C. 274 and III. C. 386 V.M.M.). Two specimens (3/5417 and 1/1071 U.P.M.) supposed to have come from the Ojibwa, have ankle flaps of buckskin embroidered with moose hair and bordered by silk. A moccasin of the "Iroquois pattern" with bead embroidered top of black cloth is also known from the Chippewa Indians of Cognawaga,

[1] F. G. Speck, *op. cit.*, fig. 22.

Canada (30842 U.S.N.M.). Even from the Sioux has come a moccasin of this pattern with turned down top of red silk, very similar to Iroquois forms, and peculiar only by having the heel flap cut into four short trailers (130799 U.S.N.M.). Among still more distant tribes may be found moccasins of this type; from the Kutchin at Lake Bennett have come moccasins (VI. G. 63 and 64 V.M.M.), seemingly made in imitation of the type fig. 25, with short turned down top of beaded cloth. Mr. F. W. Waugh of the Victoria Memorial Museum, Ottawa, has kindly given me the information that the Iroquois women sell many moccasins of their own manufacture to northwestern tribes, trading as far west as Winnipeg. It seems quite possible that the Iroquois pattern may have in that way spread itself considerably in modern time.

Round-toed moccasins entirely lacking top and consisting only of bottom and instep piece are quite common in the Eastern Woodland area. An example of these is fig. 26 (III. E. 7 V.M.M.), a Malecite moccasin of heavy white buckskin, the tongue embroidered with moose hair. The heel flap is turned up and secured with sewing. An ankle band is put through a series of holes near the upper rim of the bottom piece. Similar forms, but with ankle band sewn on—not put through holes—are the Malecite moccasins (2/8189 and 2/8194 U.P.M.), the last mentioned, an infant's moccasin, has an unsymmetrical instep piece, as in fig. 23. Very similar are also some Penobscot moccasins (2/5870 U.P.M. and III. K. 72 V.M.M.). In the last example the instep piece is unsymmetrical. From the Ojibwa at Saginaw, Michigan, has come quite a simple moccasin of this type (175470 U.S.N.M.) made of heavy commercial leather and sewn with leather thong. It consists of bottom and instep piece, without any ornamentation (very similar to the Mongolian form represented in fig. 60). Among the Montagnais, moccasins of the same pattern as fig. 26 seem to be quite common. From the Montagnais of Lake St. John are two specimens (2/8933 and 2/8939 U.P.M.), the last mentioned a child's moccasin, made of sealskin. This material is also used for a moccasin from the Montagnais of Seven Islands (III. C. 276 V.M.M.), which is very similar to fig. 26. Forms of this type

are also known from the Montagnais of North West river (153506 and 153507 U.S.N.M.), of which the first mentioned has a hemmed in drawstring around the opening, as in Eskimo footwear. A similar drawstring is found in a moccasin of the same type from the Nascapee of the Ungava district (90062 U.S.N.M.).

There are good reasons for assuming that the ten series of moccasins, which have been described so far in this paper, have been developed from one common prototype; this prototype must have been a form somewhat like fig. 10, consisting of one piece of skin gathered around the foot by means of a straight toe seam and a straight heel seam. All the variations from this fundamental type may be classified under two headings: First, straight seam replaced by T-seam. Second, the one-piece pattern replaced by two and three-piece pattern. All possible combinations of these variations have taken place and thereby our ten series have come into existence. The variations under the first as well as under the second may, however, be easily explained as changes resulting from simple improvements upon the original type.

The main advantage of the T-shaped seam lies in the fact that it prevents the pointed cone-like projection which the simple straight seam carries with it and which is especially undesirable in the heel and inconvenient also in the toe. Several schemes have been adopted to do away with that projection, such as crimping the buckskin towards the lower end of the seam, as in figs. 4, 6, and 7, cutting away the material, which would form the projection, and carrying the seam around to the under side of the foot, as in figs. 5 and 16, or turning the cone-like projection with the point inwards, as in the moccasin fig. 6, where the pointed heel is turned in and secured by a few stitches. This last method may be taken as a step towards the T-shaped heel seam, a more decided step in that direction was found in (3/6411 U.P.M.), similar to fig. 7, where the vertical heel seam is not carried all the way down and the small opening left is closed by a very short horizontal seam. In more developed forms, incisions are cut for the horizontal part of the T-seam, the flap between the incisions being often cut into "trail-

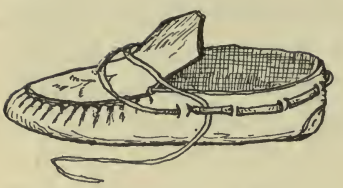
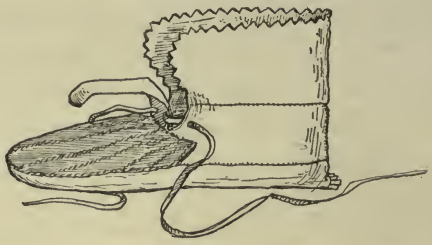
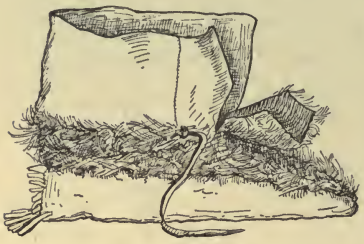


Fig. 26.—Malecite. (V. M. M.)





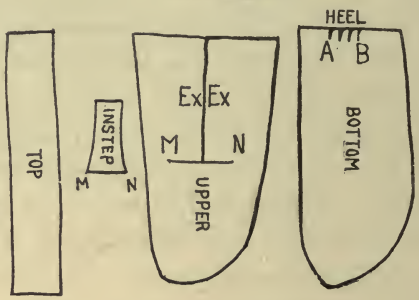


FIG. 28.—Salishan Flathead, Montana. (F. C. M.)

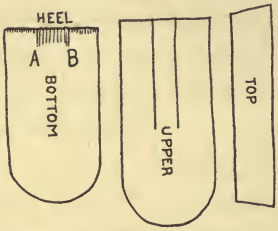
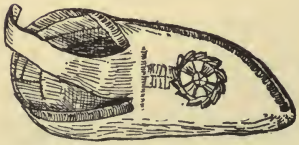


FIG. 27.—Thompson River.
(A. M. N. H.)



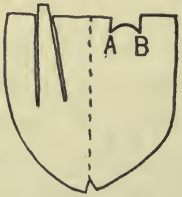


FIG. 30.—Sioux Upper Missouri.
(U. S. N. M.)

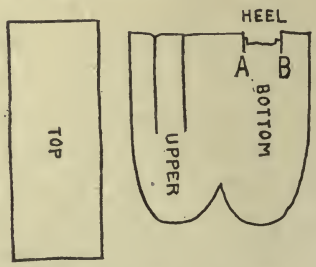


FIG. 29.—Thompson River.
(A. M. N. H.)

ers." The fully developed T-seam is superior to the other methods of preventing the cone-like projection, as it gives a more closely fitting shape and a more durable construction. It is, in fact, especially convenient as a heel seam and in that situation it is used over vast areas.

The advantages of the two and three-piece patterns over the one-piece patterns are quite obvious. As the lower part of the moccasin is especially exposed to wear, it is desirable that it should be made of thicker and more durable material than the top, which on the other hand, should be thin and pliable in order that it may fit tightly to the leg when the ankle band is wound around. Such simple considerations may at an early date in the history of the moccasin have brought about a pattern with special top piece. Curiously enough, no American moccasin is known consisting of only bottom and top, without a special instep piece; it is, however, quite possible, that such forms may have existed in America, as a form of that description is known from Sakhalin (see fig. 61).

The instep piece may have originated as a gore, put into the toe seam or part of the toe seam, to make up for scarcity of material; narrow gores of that description have been noticed in some Peoria and Quapaw moccasins of series I and in the Cayuga moccasin, fig. 22, the instep piece has still almost the character of a narrow gore, although it is ornamented with beadwork. The further evolution and fixation of the instep piece is perhaps partly due to the fact that it has become a favorite object of ornamentation. Apart from decorative purposes, the instep piece, however, also serves practical ends, as the upper part of it, together with the top piece, covers and protects the ankle. Especially important is the instep piece in the series IX and X, where it does away entirely with the toe seam and covers most of the upper side of the foot. Forms consisting of bottom and instep piece may in some instances have preceded forms with a special top piece; it seems, however, that two-piece moccasins in some cases have been due to a reduction of the top.

The differences which separate our series are then only those which may easily be accounted for as due to small changes, resulting

from gradual improvement of a common prototype. All the forms in these series may therefore safely be assumed to have one common origin. They do, however, not belong to one single line of evolution, improvements and changes have taken place in several branching directions. The line which leads from the prototype to the highly developed and important forms in series X does not take us through all the preceding series. Starting by a form like fig. 10 it probably goes on to a form somewhat like fig. 12 and then passes through a form, now obsolete, with a gore-like instep piece as it is found in fig. 22.

In the two following series of American moccasins an element is introduced, which evidently does not originally belong to any kind of moccasin; these two series therefore represent a mixture of types of different origins.

SERIES XI. MOCCASINS OF MORE THAN ONE PIECE (BOTTOM, UPPER, AND EVENTUALLY INSTEP PIECE AND TOP); THE BOTTOM HAS A T-SHAPED HEEL SEAM

Fig. 27, a winter moccasin from the Thompson River Indians (16/9532 A.M.N.H.) will serve as an example of this type. The bottom piece of buckskin, is, as the pattern shows, cut very much like the moccasin fig. 24, only somewhat narrower, as it does not reach as far up on the sides of the foot as does the bottom piece in the moccasins of series X. It is also not turned as far up over the end of the foot. It is joined to an upper of marmot skin with the hair outward. This upper piece cannot be compared to the instep piece of the foregoing series as it covers the whole upper side of the foot and is closed behind by means of a median seam which continues the heel seam of the bottom piece. In fact, this upper piece is a new element, the origin of which must be sought in one of the following series of soled footwear. It will be noticed that a similar upper piece is used in series XV. Two parallel cuts separate a tongue from the middle of the upper; this tongue, together with a buckskin top, clothes the ankle. An ankle band is attached on each side. No ornamentation is found, except that the hind part

of the bottom piece is cut into fringes. The same pattern is found in another moccasin from the Thompson River Indians (VI. M. 122 V.M.M.), where the upper, however, is made of heavy black cloth, decorated with appliqué-work in buckskin; and also in a very crude deerskin moccasin from the same tribe (16/9116 A.M.N.H.).

A variation of this type is shown in fig. 28 (111890. F.C.M.), a moccasin from the Salishan Flathead of Montana. The material is smoked buckskin. The bottom piece as well as the upper is here unsymmetrical, whereby the outline of the moccasin becomes very similar to the soled footwear of the Plains. It will be noticed that the instep in this case is cut differently from fig. 27, not as two parallel incisions, but as a T-shaped incision as in series XIV. The tongue is a separate piece, sewn to *mn*; the flaps *ex* serve as ankle extensions, enlarged by means of a special top piece. Ankle bands are drawn through the upper and the tongue on each side. The upper side of the moccasin is covered with beadwork. The heel flap, between *a* and *b* is cut into three trailers. The same pattern is found in a child's moccasin from the Ponca (15199 U.S.N.M.), which, however, is provided with an extra sole of rawhide and has no special top piece. This type is also known from the Sioux (200403 U.S.N.M.). Wissler describes a Shoshonean moccasin which seems to belong in this group.[1]

SERIES XII. MOCCASINS OF ONE PIECE (IN SOME CASES PROVIDED WITH A SPECIAL INSTEP PIECE OR A TOP PIECE), HAVING A T-SHAPED HEEL SEAM AND A SIDE SEAM, RUNNING FROM A POINT NEAR THE MIDDLE OF THE HEEL SEAM, ALONG THE OUTER SIDE OF THE FOOT AND AROUND THE TOE

This group has very close relations to series XI; in fact, the patterns of XII differ only from the patterns of XI in one point: bottom and upper are cut in one piece, whereby part of the seam joining bottom and upper is spared. This very ingenious one-piece pattern represents a rather high degree of development; and it seems plausible that it was evolved out of series XI. Series

[1] Wissler, *op. cit.*, p. 142, fig. 87.

XII occurs much more often than XI, and is quite widely used by the Salish and northern Shoshonean tribes, is found also among the Arapaho, Cheyenne, Sarsi, Blackfoot, Cree, and Sioux, and occasionally in other tribes.

In fig. 29 (16/986 A.M.N.H.), a buckskin moccasin from the Thompson River Indians, the pattern is strongly suggestive of fig. 27; it consists of bottom and upper in one piece and a special top. The tongue is made by two parallel incisions in the upper; the heel flap is cut into two trailers. Characteristic for this, as for fig. 27, is the trait that the outline of the moccasin is symmetrical, or nearly so. This type is quite common among the Thompson River Indians (VI. M. 124 and VI. M. 125 V.M.M., 111750 and 111753 F.C.M.). The same pattern and the same nearly symmetrical shape is found in a moccasin from the Chippewa (3/5411 U.P.M.), and in a moccasin collected in northern Utah (19871 U.S.N.M.). More common, however, are forms of more or less unsymmetrical shape, the inner side being more straight, the outer side more rounded; such forms are found among the Thompson River Indians (VI. M. 121 V.M.M.), and still more unsymmetrical examples among the Nez Percé, Idaho (23855 U.S.N.M.), the Shoshoni (19836 U.S.N.M.), the Arapaho (165786 U.S.N.M.), the Cheyenne (96830 and 69902 F.C.M.—of buffalo skin with hair inwards), the Cree of Alberta and Assiniboia (15020 84277 84265 and 84302 F.C.M.), the Salteaux of Assiniboia (84266 F.C.M.), and the Sioux on the upper Missouri river (1897 U.S.N.M.). The last-mentioned example is represented in fig. 30; its strongly unsymmetrical form reminds one of the soled footwear from the Plains, *e. g.*, of the Sioux moccasin, fig. 39. Wissler, who gives this type as his pattern 8, has found it among the Cree, Thompson, Nez Percé, Sarsi, Assiniboin, Blackfoot, and Gros Ventre.[1]

Another modification, which should be compared with fig. 28, is represented in fig. 31 (22018 U.S.N.M.), a moccasin from the Wind River Shoshoni. The heel flap is cut in fringe-like trailers and a fringe is sewn into the vertical part of the heel seam. The

[1] Wissler, *op. cit.*, p. 151.

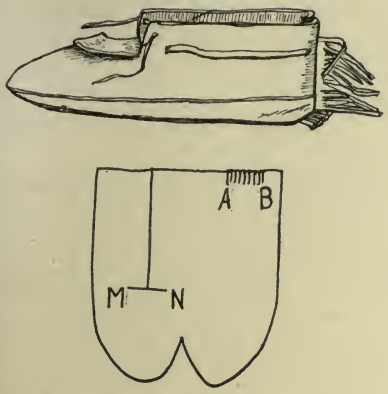
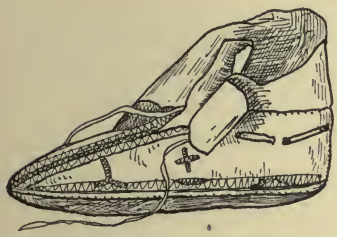


FIG. 31.—Wind River Shoshoni. (U. S. N. M.)



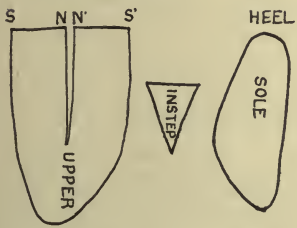


FIG. 32.—Ute. (U. S. N. M.)

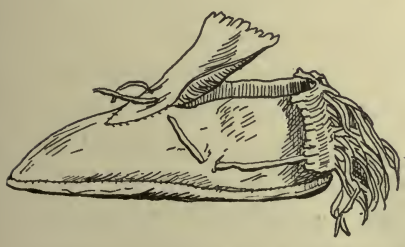
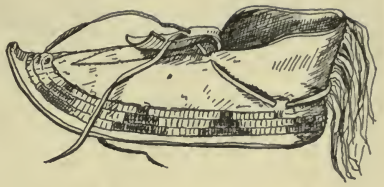


FIG. 33.—Apache. (U. S. N. M.)



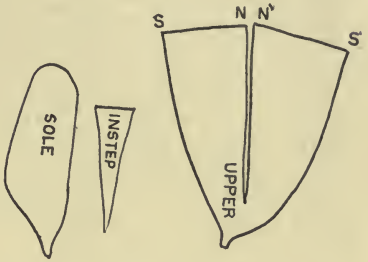
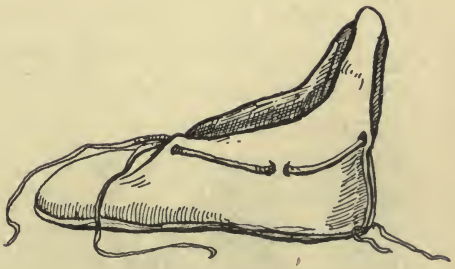


FIG. 34.—Mescalero Apache. (U. P. M.)



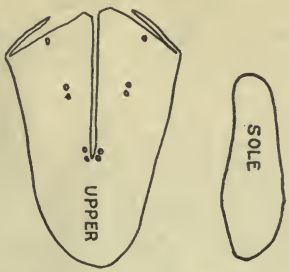


FIG. 35.—Osage. (F. C. M.)

instep opening is made as a T-shaped incision; a short tongue is sewn to *mn*. There is no separate top piece. The outline of this moccasin is distinctly unsymmetrical. Several Shoshoni moccasins of this type have been noticed (60544 F.C.M., 200394, and 165147 U.S.N.M.), in one case with a special top piece, like fig. 28. The same type is also known from the Bannock (167727 U.S.N.M.) and the Salishan Flathead (51799 and 111893 F.C.M.).

A peculiar form, belonging to this series, has come from the Haida of Queen Charlotte islands (53007 F.C.M.). It is made of one piece of thin reindeer skin, hair inwards, has T-shaped heel seam and a seam along the outer side of the foot; it differs, however, from the preceding forms in the instep opening, which is cut as a straight incision, or similar to the pattern of the following series (XIII) of soled footwear.

It will thus be seen that series XI and XII, of which the latter must have been evolved from the former, have all the three different patterns of uppers which characterize the three following series of soled footwear. On the other hand, the bottom parts of XI and XII are almost identical with the type of bottom used in series X. Accordingly, XI and XII must be regarded as mixed types, made up of elements from series X joined to elements of the series XIII, XIV, and XV, which are described in the following. This fact is all the more important, because XIII, XIV, and XV constitute, as we shall see, a group of forms, quite distinct and different from our moccasin group.

How did this mixture of types, which we find expressed in XI and XII, come about? The following explanation seems to me the most plausible: tribes who were using moccasins of series X became acquainted with footwear types of series XIII, XIV, and XV. Desirous of adopting the elaborate ornamentation of these foreign forms, they took over the upper pieces of them, and accordingly had to discard the original instep piece of the moccasin. As soon as the bottom of X was combined with the top of XIII, XIV, or XV, series XI came into existence. From XI was later on evolved XII, when it became customary to cut bottom and upper in one piece. Influences of the ornamentation of one kind of foot-

wear upon another kind are not uncommon. As an instance may be mentioned a Cayuga moccasin from Grand River reservation, Ontario, fig. 40 (55799 F.C.M.), originally made of one piece of buckskin with straight heel and toe seam, and accordingly belonging to series I, but later on provided with an extra upper of unsymmetrical cut and heavily beaded, which, together with large patches under the foot, gives this moccasin an appearance suggestive of a soled shoe from the Plains. The fact that moccasins of series XI and XII are now in some cases undecorated does not, of course, weaken this theory of origin; the mixed types, when first established, would be subject to the same changes in ornamentation as any other type. The geographical distribution of XI and XII is well in accordance with the theory; the mixed types are found just on the northern and northwestern borderland of XIII, XIV, and XV, where these are used together with the moccasin forms of the most highly developed types.

SERIES XIII. SHOES CONSISTING OF A FLAT SOLE AND AN UPPER PIECE, WITH VERTICAL HEEL SEAM; THE OPENING FOR THE INSTEP IS CUT AS A STRAIGHT SLIT, AND—IN MOST FORMS—A SPECIAL INSTEP PIECE, GORE-LIKE, IS SEWN INTO THE FOREMOST PART OF THIS SLIT

This and the following series of American footwear has apparently no evolutionary connection with series I–X, and accordingly the term moccasin should not be applied to them. It will be noticed that they cannot be brought under the definition which has been given for that term (p. 151).

As an example of series XIII we have fig. 32 (152573 U.S.N.M.), a shoe from the Ute. The sole is made of rawhide, the grain side outwards and cut with an unsymmetrical outline after the shape of the foot. The upper is made of heavy smoked buckskin, cut, as the pattern indicates, with a median slit going more than halfway through; in the anterior part of this slit is inserted the gore-like instep piece, the broader part of which is free. The two branches of the upper are joined behind in a vertical heel seam (*n*

being joined to n' and s to s'), and the upper is sewn to the sole by means of stitches going only halfway through the sole. An ankle band is put through a series of holes in the upper. A top, not given in the pattern, is sewn to the upper and is open in front. The upper is decorated with bead embroidery. This pattern seams to be quite common among the Ute (*e. g.*, 152572 152575 115380 U.S.N.M.), and just as common among the Apache. An Apache example is fig. 33 (200389 U.S.N.M.); the rawhide sole is not entirely flat, but a little turned up along the rim. This, probably, is due to influence from series XVII. Upper and instep piece are made of buckskin, colored with yellow ocher, cut very much as in fig. 32. The hind parts of the upper and the instep pieces are cut into short fringes and a fringe is sewn into the heel seam. There is no top, and the shoe is not decorated with any embroidery. The ankle band goes through a series of holes in the upper and two holes in the instep piece. In another Apache shoe of this type (200364 U.S.N.M.) the instep piece is longer, the hind part of the upper is cut into a long fringe, and bead embroidery covers the instep seam and surrounds the foot a little distance above the sole. Still more decorated is another Apache shoe (200365 U.S.N.M.), where two fringes are sewn into the heel seam, terminating above with two long flaps; the instep piece is a very long and narrow gore, reaching nearly to the end of the foot, covered with beadwork, and in the seam along the outer side of the instep piece is inserted a strip of buckskin, to which is attached a series of small metal cones, forming a sort of fringe. In decoration and outward appearance this shoe is very much like some Kiowa shoes which, however, in accordance with their pattern, must be placed in group XIV. An interesting form from the Mescalero Apache is represented in fig. 34 (2/3343 U.P.M.). The rawhide sole has a peculiar shape, ending in front on the inner side in a narrow projection, and the outline of the upper is cut accordingly. This peculiar projecting toe is still more characteristic of the Apache boots, which are mentioned under series XVIII.

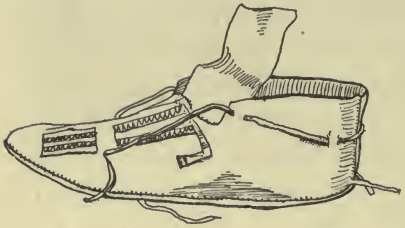
The most primitive forms of series XIII are known from the Osage Indians. As an example we may take fig. 35 (59212 F.C.M.),

which consists of sole and upper, without any instep piece or tongue. The rawhide sole has a characteristic outline, curved inwards on the inner side. An ankle band is put through a series of holes in the upper. The two trailers behind are cut from the upper. A similar pattern is found in another Osage man's shoe (2/846 U.P.M.) where, however, a rectangular piece of buckskin cut into fringes is sewn to the upper as a false instep piece. This form will be mentioned again on account of its relation to certain forms in series XVI.

SERIES XIV. SHOES CONSISTING OF A FLAT SOLE AND AN UPPER PIECE, WITH A VERTICAL HEEL SEAM; THE OPENING FOR THE INSTEP IS CUT AS A T, THE INSTEP PIECE SEWN TO THE TRANSVERSE PART OF THE CUT.

To this series belong most of the soled shoes of the Plains. The pattern varies only inconsiderably; the many styles of ornamentation found on these shoes do not concern us here. A typical example from the Sioux is given in fig. 36 (8535 U.S.N.M.). The rawhide sole is cut from a parfleche; the upper shows a striking similarity to the upper of the moccasins, figs. 28 and 31. The instep piece is joined to the transverse part of the T-shaped slit in the upper (*mm* joined to *m'm'*). The material on both sides of the T-shaped slit forms short ankle-extensions, provided with holes through which an ankle band is drawn. The trailers at the lower end of the heel seam are cut from the upper. This type is used commonly by the Dakota, Mandan, Crow, Assiniboin, and other Siouan tribes of the Plains. Also by the Osage who, however, seem to favor shoe forms of series XIII and XVI. It is also commonly used by the Arapaho, Cheyenne, Blackfoot and Gros Ventre, and by the Pawnee, Wichita, and Arikara. It is also used by the Ute and Shoshoni and by the Salishan Flathead. Examples from the tribes mentioned are quite numerous in the United States National Museum and the Field Columbian Museum.[1]

[1] Compare also Wissler, *op. cit.*, p. 151, where a table of distribution of patterns is given. Wissler's pattern 1 is our series XIV; and pattern 2, an insignificant variation of pattern 1, should be placed in the same series.



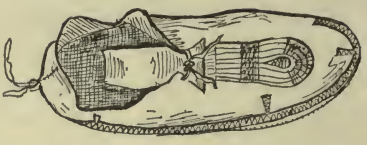


FIG. 38.—Crow, Montana. (F. C. M.)

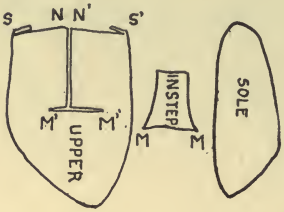
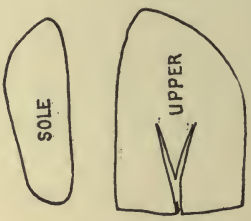
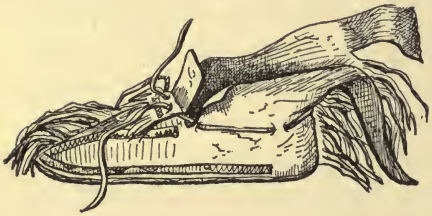


FIG. 36.—Sioux. (U. S. N. M.)





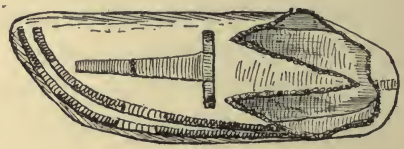


FIG. 39.—Sioux, Minnesota. (U. S. N. M.)

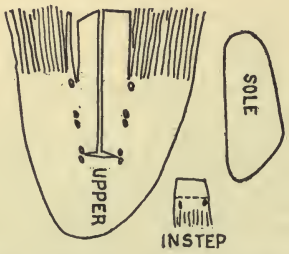


FIG. 37.—Kiowa. (U. S. N. M.)

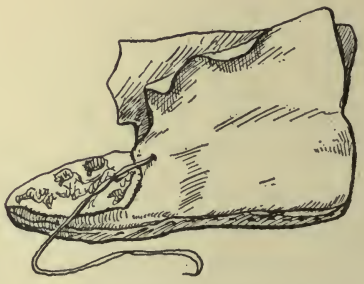


FIG. 40.—Cayuga. (F. C. M.)

A peculiar variation of this type is used by the Kiowa, of which fig. 37 (152855 U.S.N.M.) may serve as an example. The shoe is comparatively high behind and the upper, as the pattern shows,

is cut into fringes at the heel, two long flaps being left at the top of the heel seam. The anterior part of the instep piece, which is sewn to the upper by a seam running across its middle, is also cut into a fringe and the ankle band is put through two holes in the anterior part of the instep piece. The ornamentation of this shoe gives it a striking similarity to certain Apache moccasins belonging to group XIII. This is mainly due to a buckskin fringe which is sewn to the upper, running obliquely from the outer side of the instep down towards the toe and which, together with a line of bead embroidery running from the inner side of the instep towards the toe, surrounds a triangular space on top of the foot, suggesting the gore-like instep piece which in some Apache forms (200365 U.S.N.M.) is ornamented with a similar fringe.

Such borrowing of ornaments which originally belong to other groups is not uncommon and contributes to the complexity of styles of ornament. Another example, from the Crow of Montana, is shown in fig. 38 (69368 F.C.M.), which, according to pattern belongs to XIV, while the bead and quillwork suggests influence from two other series. The line of beadwork which follows the outer side of the foot, a little above the sole seam, running around the toe and terminating a small distance beyond this on the inner side of the foot has evidently been borrowed from XII, where this ornament is often used to mark the side seam (compare fig. 30). On the other hand, the bead and quillwork which covers the middle part of the upper, suggests a borrowing from some of the moccasins with embroidered instep piece in series V–X.

SERIES XV. SHOES CONSISTING OF A FLAT SOLE AND AN UPPER PIECE, WITH VERTICAL HEEL SEAM; THE OPENING FOR THE INSTEP IS CUT AS A Y OR AS TWO PARALLEL LINES; THE TRIANGULAR OR RECTANGULAR TONGUE SERVING INSTEAD OF A SPECIAL INSTEP PIECE. IN SOME CASES A SPECIAL TOP PIECE IS ADDED

The geographical distribution of this series is partly the same as that of XIV, the types being largely used by the same tribes.

The material found in museums seems, however, to indicate that XV is less commonly used than XIV.

As an example we have fig. 39 (178890 U.S.N.M.), from the Sioux of Minnesota. The sole is cut from a piece of parfleche, the upper is made of buffalo leather, colored yellow by means of ocher and ornamented with beadwork. It will be noticed that the upper is cut very much like the upper of fig. 30, in which, however, the tongue is cut by two parallel incisions. In the ornamentation also an interesting similarity is found; two lines of beadwork follow the outer edge of the shoe, a little above the sole seam, recalling a similar ornament which in fig. 30 follows the side seam of that moccasin. There can be no doubt that this ornament which has also been found on shoes belonging to XIV originated as a decoration marking the side seam, which is so characteristic of XII.

Fig. 39 is an intermediate form between Wissler's pattern No. 3 and pattern No. 5.[1] In the last of these the instep is cut as a Y, but with a very short tongue; in the first, the instep is cut as two parallel incisions and the tongue is accordingly very large as in our fig. 30. Wissler's pattern 3 and 5 belong both to our series XV. There can hardly be any doubt that the Y-shaped instep and the two parallel incisions represent only two modifications of one and the same idea: that of cutting the tongue from the same piece of skin as the upper, thus avoiding the insertion of a special instep piece. The Y-shaped instep is less common than the two parallel lines. It seems plausible that the Y-shaped instep was evolved as a modification of the T-shaped instep of XIV and from the Y-shaped incision was afterwards evolved the two parallel incisions.

Shoes of series XV seem, according to examples in the Field Columbian Museum and according to Wissler's table of the distribution of patterns (based upon the material in A.M.N.H.), to be expecially common among the Sarsi, and also quite common among the Blackfoot and the Gros Ventre. It is also found among the Arapaho (200383 U.S.N.M., 67972 F.C.M.) and the Cheyenne (178931 U.S.N.M., 67393 69905 and 69907 F.C.M.), the Ute (200398 and 115385 U.S.N.M.), the Chinook of the Columbia

[1] Wissler, *op. cit.*, fig. 79 and fig. 86.

river (673 U.S.N.M.), the Sioux (1901, 178890 and 200401 U.S. N.M.), Omaha (2107 U.S.N.M.), Assiniboin (8499 U.S.N.M.), and some other Siouan tribes.

It seems justifiable to assume that XIII, XIV, and XV have had a common origin. The differences between these groups pertain only to the instep and it is quite conceivable that the straight slit, characteristic of XIII, might in time be replaced by a T-shaped slit, to accommodate a rectangular instep piece. Later on the Y-shaped slit and two parallel slits may have come into use, when the idea arose to cut the tongue of the same piece of skin as the upper.

The form and character of the sole[1] does not give us any fruitful suggestions as to the history of these forms. Wissler has set forth the conjecture that the soled shoes of the Plains might be an adaptation of the sandal idea.[2] There is, however, nothing in the construction of these forms that indicates relation to any sandal. There is no similarity to sandals, except that both sole and sandal serve the purpose of protecting the under side of the foot and are often made of the same kind of material. If the soled shoes of series XIII–XV were evolved from sandals, we would expect to find in some of these forms details of construction which suggested definite relation to some form of sandal. I have elsewhere shown that the footwear of the Eskimo, as well as certain Asiatic forms,

[1] It is commonly said that the Indians were able to distinguish the footprints of moccasins of their own and neighboring tribes. Accordingly, we might expect to find the outline of the sole characteristically different in shoes from different tribes. Something of that sort unquestionably may be found. Wissler has called attention to the fact that the Comanche use a sole with peculiarly straight inner side (Wissler, *op. cit.*, p. 150). The Osage use a sole with quite a different outline, the inner side being curved inwards (*cf.* fig. 35). On the whole, however, I have been able to discover only very faint differences between the outlines of the soles of different tribes. It is, of course, quite possible, that to the Indians these differences presented themselves much more distinctly. Mr. E. W. Lenders of Philadelphia has kindly presented me with the following series of sole outlines from five different Plains tribes (fig. 41), given to him by chief Noisy Owl of the Oglala Sioux, about twelve years ago. As a matter of fact, these drawings convey a false idea of the actual forms of the soles used by the tribes in question. This may be due, however, to a very strong exaggeration of the characteristics of the forms.

[2] Wissler, *op. cit.*, p. 151.

contain such elements of construction, which prove with a fair degree of certainty that these forms were evolved from a certain kind of sandal in combination with a stocking. But so far no connection of that kind has been proven for the soled shoes of the Plains.

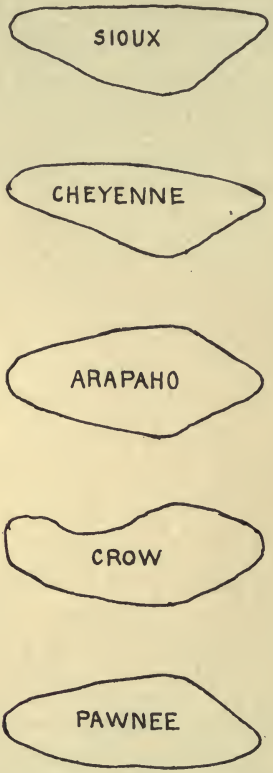


FIG. 41.—Sole outlines from different Plains tribes, as given by an Oglala chief. (Courtesy of Mr. E. W. Lenders.)

Several instances are known where patches or a whole extra sole, sewn under an ordinary moccasin of one of the first series here described, gives such a form the character of a soled shoe. As an example may serve the already mentioned form, fig. 40 (55799 F.C.M.), a Cayuga moccasin, belonging to series I, but provided underneath with large patches which have the character of a sole. The Virginia Indians sometimes strengthened their

moccasins with an extra sole.[1] It is conceivable that an Indian tribe might become so accustomed to such soling of moccasins that by and by they would make soled shoes instead of moccasins, replacing the lower part of the moccasin with a sole of heavy material. In that case, however, the soled shoes resulting would, in their upper part, bear distinct traces of the moccasin from which they were evolved. Now, our soled shoes XIII, XIV, and XV show no similarity in the pattern of their uppers to any form of the moccasin series I–X, while there is an unquestionable similarity to the upper parts of the moccasins XI and XII. This interesting fact has already been explained upon the assumption that XI and XII are mixed forms, whose upper parts are derived from the soled shoes XIII, XIV, and XV. Accordingly, this similarity cannot be used in the opposite direction, to explain the origin of our series XIII, XIV, and XV for which we must look elsewhere.

The best theory as to the origin of these three series seems to be that they were derived from a very peculiar and rare form, still used by the Osage and the Quapaw Indians. This form is treated in the following series.

SERIES XVI. SHOES MADE OF ONE PIECE, WITH A MIDDLE SEAM RUNNING ON THE UNDER SIDE, FROM THE TOE RIGHT THROUGH TO THE HEEL AND CONTINUED AS A STRAIGHT HEEL SEAM

This series is not very rich in forms and has at the present day a small area of distribution, being known only from the Osage and Quapaw Indians of Oklahoma. Nevertheless, it is of considerable interest, as it seems to be the prototype of an important group of types.

Two variations are found. The shoe may be made of a roughly triangular piece of buckskin with rounded corners, and a small incision in the corner that makes the toe. This gives a form comparatively high over the instep and low at the heel. In the other variation a straight slit is made for the instep; this form is comparatively low over the instep.

[1] Willoughby, "The Virginia Indians," *American Anthropologist* (N.S.) vol. 9, 1907, p. 70.

As an example of the first-mentioned form see fig. 42 (2/853 U.P.M.), a woman's shoe from the Osage of Oklahoma. An ankle band can be put through the two holes in front of the instep. Of the same type is an Osage shoe in the Field Columbian Museum (59210). Through use, the shape of the shoe becomes unsymmetrical and the seam becomes oblique.

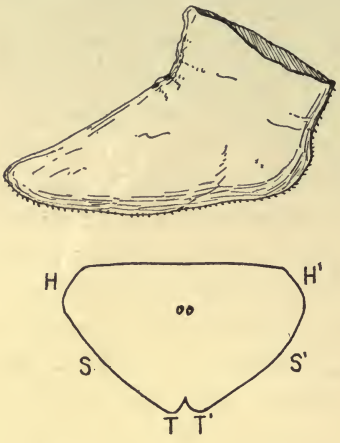


Fig. 42.—Osage woman's shoe. (U. P. M.)

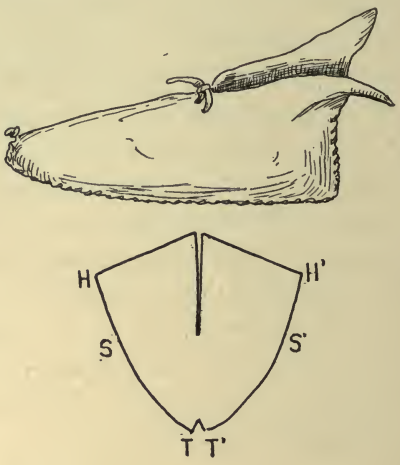


FIG. 43.—Quapaw. (U. S. N. M.)

FIG. 44.—Quapaw. (U. P. M.)

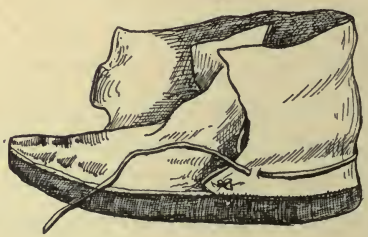


FIG. 45.—Apache. (U. S. N. M.)

The second variation, without doubt representing a higher development than the first, is represented in fig. 43, a Quapaw shoe (1/9999 U.P.M.). The pattern shows an unmistakable similarity to the upper used in shoes of series XIII (*cf.* the Osage shoe fig. 35, described on p. 184). The differences are, that the pattern, fig. 43, has a small median incision at the toe, and that, instead of being

attached to a rawhide sole, the rim *hst* is joined in a median seam under the foot to *h's't'*, thus producing a soft, stocking-like shoe without a sole.

In fig. 44 (1/9990 U.P.M.), another Quapaw shoe, the pattern shows a form, intermediate between figs. 42 and 43; the instep slit is less deep and the heel less high than in fig. 43. A similar pattern would be produced by cutting a short slit to prolong the instep in fig. 42. A short ankle band is drawn through two holes in front. The front of the shoe is decorated by a fringe, produced by drawing short strips of buckskin through holes. This trait may have been borrowed from certain Kiowa shoes ornamented with a similar fringe. More interesting is another feature, through which the relation of the present series to XIII becomes quite impressive: after having been partly worn out and made unsymmetrical through use, the shoe was provided with an extra sole underneath, kept in place by sewing with a buckskin thong along the rim. This gives fig. 44 a striking similarity to the soled shoes of series XIII. In fact, if the useless bottom of the original shoe were removed and an instep piece added this form could be placed in series XIII.

It seems plausible, that XIII has actually originated as an improvement of a type like fig. 44, a sole being put on the shoe at the making and the useless original bottom part being omitted. From XIII may later on have been evolved XIV and XV. In conclusion, XVI may be the sought for prototype of XIII, XIV, and XV.

SERIES XVII. SHOES CONSISTING OF SOLE WITH TURNED UP RIM, AND INSTEP AND TOP PIECES WHICH ARE SEWN TO THE SOLE, BUT NOT CONNECTED WITH EACH OTHER BY ANY SEAM

This series has probably no evolutionary connection with any of the preceding groups. As to geographical distribution, it is distinctly Southwestern. Forms are known from the Zuñi, Hopi, Navajo, Apache, Walapai (Yuman stock), and from the Paiute. The forms vary mainly in the comparative extent of the top piece.

An example is given in fig. 45 (200358 U.S.N.M.) from the

Apache. The sole is made of heavy black leather, the grain outside, turned up at a right angle all along the rim (this must have been done after the leather had been saturated with moisture). The outline of the sole is unsymmetrical, shaped according to the outline of the foot. The instep piece, of reddish-brown buckskin which covers the anterior part of the foot has a large free flap. The top piece, made of the same kind of material, is sewn directly to the sole, and in front on each side it covers a small part of the

FIG. 46.—Yuma, Arizona. (U. S. N. M.)

instep piece. A short buckskin thong is on each side drawn twice through the sole, instep piece, and top piece, securing the connection between these three. A special ankle band is drawn through holes in the top piece. The United States National Museum has several Apache shoes of this type, and similar forms are known from the Navajo (*cf.* Mason, *op. cit.*, p. 356, fig. 63 and fig. 64; in fig. 63 the inner side of the top piece is provided with a large flap which is turned over the instep and buttoned on the

FIG. 47.—Hopi woman's shoe. (Nationalmuseet, Copenhagen.)

outside of the shoe). Examples are also known from the Hopi (men's shoes, 11195 22812 and 41828 U.S.N.M.) and from the Paiute (12068 U.S.N.M.).

In fig. 46 (31039 U.S.N.M.) is shown a shoe from the Yuma-Apache, Arizona, the top piece is of heavy buckskin, considerably larger than in fig. 45, with two large anterior flaps; together with the free flap of the instep piece it covers the lower part of the leg. On each side, just above the sole, a short thong is drawn through top piece and instep piece. A long ankle band is attached by sewing above the heel. After the original sole was worn out, the bottom of it was cut away and an extra sole put on, of heavy rawhide.

Fig. 47 (Hd 194, Nationalmuseet, Copenhagen) illustrates a woman's shoe or boot from the Hopi Indians, the top piece is still larger, a veritable legging, made of one half of a dressed deerskin which is divided by a median cut; the holes from suspending and drying the skin are still visible along the rim. The sole, made of heavy rawhide and turned up along the rim, is sewn onto this top piece at one end; and the free end of the top piece is wrapped around the leg, covering this as far as the knee. An ankle band is drawn through the sole on each side, the instep, and the top piece; evidently, the short thongs which in fig. 45 and 46 were noticed in the corresponding place must be considered as a sort of rudiment or survival of similar ankle bands. This type is used as woman's footwear among the Hopi (22781 22782 and 68976 U.S.N.M.), Zuñi (127702 U.S.N.M.), Navajo (166596 U.S.N.M.), and Walapai (63090 63134 U.S.N.M.).

No essential structural similarity can be detected between this series and any of the preceding. Therefore, it seems improbable that it should have been evolved from the same prototype as any of these. The pattern suggests quite a different prototype and origin of this series. The shape of the sole, which is one of the most characteristic traits, and the ankle band, put through the sole near its rim, might indicate that the sole originally was a rawhide sandal, bound to the foot by marginal bands. Made of a different material, but in construction not unlike this supposed prototype

are some examples of yucca leaf sandals with marginal loops, from cliff-dwellings in Arizona, published by Mason (*op. cit.*, plate 5, figs. 1, 2, and 4). Sandals of a similar construction, but made of rawhide or leather, may have been the sought for prototype. Dr. P. E. Goddard has kindly called my attention to the existence of a thick leather sandal from a cliff ruin in Utah, in the American Museum of Natural History. This sandal has a marginal loop on each side and also an over-toe loop for one or two of the middle toes.

Rawhide or skin sandals with marginal loops, cut out in the rawhide or skin near the rim through which bands are drawn, are known from Peru[1] and Patagonia,[2] from East Greenland,[3] and from many European localities (Caucasus, the Baltic provinces, Iceland, the Shetland Islands,[4] and other places). It is probable that this sandal type was in earlier times still more widely distributed, as sandals of vegetable material with marginal loops are known not only from Arizona and southern Utah, but also from the Klamath Indians of northern California and the Aino of Yezo.[5] The Lillooet of the Thompson River, B.C. use a peculiar sort of sandal, consisting of an oval bottom of cottonwood and a buckskin rim with holes for the band (111751 F.C.M.). This may be a modern form, derived from an earlier form made wholly of skin. I have elsewhere set forth the hypothesis, and proven its probability, that a sandal of that type, made of a piece of skin with turned up rims and a lace through holes near the margin, was the prototype for the sole of Eskimo footwear and certain north Asiatic types of footwear. If our series XVII also has such a sandal for its prototype, then this would give added interest to Mason's remark about the finely puckered soles of the Navajo footwear: "This work is suggestive of the Eskimo shoemaker."[6]

[1] Mason, *op. cit.*, p. 368, fig. 70.

[2] Musters, *At Home with the Patagonians*, p. 170. An example from the Araucanians is represented in my book, *Arktiske Skinddragter*, plate XIV, fig. 1.

[3] Thalbitzer, "Ethnographical Collections from East Greenland," *Meddelelser om Groenland*, vol. XXXIX, fig. 314b.

[4] *Cf.* this paper fig. 70, a sandal from the Shetland Islands.

[5] Mason, *op. cit.*, p. 355, fig. 62, and plate 5, fig. 3.

[6] Mason, *op. cit.*, p. 355.

SERIES XVIII. FOOTWEAR CONSISTING OF SOLE WITH TURNED UP RIM, AND UPPER, GENERALLY OF ONE PIECE; IN SOME CASES THE ANTERIOR PART OF THE FOOT IS COVERED WITH A SPECIAL PIECE, CONNECTED WITH THE REST OF THE UPPER BY A TRANSVERSE SEAM

Footwear of this series is known especially from the Apache, Ute, and Paiute, and also from the Pueblo tribes. The shape of the sole, which is always made of heavy rawhide and has an upturned rim, and the fact that this series, like the preceding, is distinctly Southwestern, leads to the supposition that these two series might have had a common prototype. The forms of series XVIII differ in the extent of the upper which in some cases is rather low, bootee-like and in others attains a considerable height, and also in the shape of the anterior part of the footing, which in Apache footwear evolves a peculiar protruding point or flap.

An example from the Paiute of southern Utah is seen in fig. 48 (14386 U.S.N.M.). The heavy rawhide sole is turned up all around and especially high behind. The upper is made of one piece of buckskin, gathered by a seam behind, a deep slit in front can be partially closed by lacing. The United States National Museum has several examples of this form from the Paiute (14384–14387).

Wissler describes a bootee-like shoe from the Apache, having a rawhide sole similar to fig. 48 and an upper of one piece, the edges of which go over each other on the outer side of the foot and are buttoned or tied together. From the Zuñi, Wissler gives a somewhat similar example, where the upper of one piece is closed on the outer side of the foot by means of a button; and from the Hopi an example, differing from the Zuñi shoe only by having a special toe-piece, connected with the rest of the upper by a transverse seam.[1]

Most highly developed in this series are the Apache boots, where the upper has the character of a long legging. Three examples are given in figs. 49, 50, and 51, showing a gradual increase of the toe-flap, which in fig. 49 has a simple triangular pointed shape, not especially set off from the rest of the footing, but in fig.

[1] Wissler, *op. cit.*, pp. 148–149, figs. 96–98.

FIG. 48.—Paiute. (U. S. N. M.)

FIG. 51.—Apache. (U. S. N. M.)

FIG. 50.—Apache. (U. S. N. M.)

FIG. 49.—Apache. (U. S. N. M.)

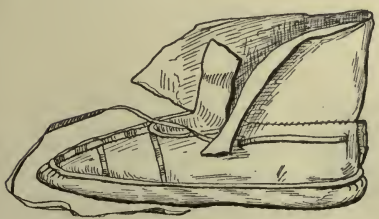


FIG. 52.—Gosiute. (U. S. N. M.)

51 has an oval, or rather circular form, connected with the rest of the foot by an especially narrow part. Figs. 49 (200363 U.S.N.M.) and 51 (151995 U.S.N.M.) are both from the Apache. Fig. 50 (202799 U.S.N.M.) which seems to occupy an intermediate position with regard to the extent of the toe-flap, is of unknown origin, but is probably also Apache. It seems reasonable to assume that the toe-flap, so characteristic of the Apache boots, and also found in the Apache shoes (*cf.* fig. 34), might have been developed by gradual exaggeration of the projecting anterior corner of the footwear, originally meant as an accommodation for the big toe. In all the three examples given, the sole is made of rawhide with more or less upturned rim. The upper which reaches a height of 40 cm. and more, is made of one piece with a vertical seam behind or along one side. In fig. 49 the anterior part of the foot is covered with a special piece, the connecting transverse seam being marked with beadwork. An ankle band is put through a series of holes around the ankle in figs. 49 and 51. A leather thong is never put through the sole near its rim, as found in series XVII. Apache boots often have extremely long tops, about 1 m., which, however, are always turned down, as they are not intended to reach very much above the knee; the uppermost part of such boots may therefore consist of from two to four layers (2/1317 and 2/3402 U.P.M., 21535 and 151996 U.S.N.M.). Wissler describes a Hopi boot which, with regard to pattern, should be compared to Apache boots, although it has no protruding toe-flap.[1] The Ute Indians of Colorado use boots very much like fig. 49 (10780 U.S.N.M.). The Ute, however, also use boots with tops similar to fig. 49 and with perfectly flat sole; in an example from the Ute of Uinta valley, Utah (17219 U.S.N.M.), the vertical seam of the upper is placed on the outer side and a strip of buckskin sewn into this seam, protruding as a decorative flap.

SERIES XIX. FOOTWEAR CONSISTING OF SOLE WITH TURNED UP RIM, UPPER, TOP, AND, EVENTUALLY, INSTEP PIECE

This series, known only from the Ute and Gosiute, seems to contain elements from different types. The sole is of the same

[1] Wissler, *op. cit.*, fig. 95.

shape as in the two preceding series; the upper part reminds one more of the soled shoes in series XIII. The instep piece, only found in one case, is not gore-like, but rounded, like the instep piece in the moccasins, series V–X.

An example is given in fig. 52 (115381 U.S.N.M.), from the Gosiute, Deep Creek, Utah. A strip of buckskin is sewn into the seam which combines the rawhide sole with the buckskin upper. The upper is decorated with beadwork and the instep piece covered with blue cloth. An ankle band is put through a series of holes in the upper. The top is open in front. From the Ute of Uinta Valley, Utah, a similar form is known, but without instep piece (17217 U.S.N.M.). In two other examples from southern Utah (14388 and 14390 U.S.N.M.), the sole is made of heavy buckskin, no instep piece is found, and the ankle band goes through a series of holes in the top piece which is open in front and very high, reaching to the knee.

SERIES XX. ESKIMO BOOTS AND SHOES

An exhaustive treatment of the footwear types used by the Eskimo will not be attempted in the present paper. This subject, in itself quite extensive, belongs rather under a general study of arctic clothing. I wish to point out two facts only, which are of interest here: (1) The boots and shoes of the Eskimo are varieties of one fundamental type. (2) This type cannot have been evolved from any of the true moccasin forms of the series I–X. Only the outer footwear is mentioned. Inner footwear, or stockings, is not taken into account here, although considered later when we come to treat the question of the origin of the moccasin types.

All Eskimo shoes and boots, aside from a few rare examples of European or Indian influence, have one important characteristic in common: the sole is turned up all along the rim, with more or less puckering before and behind. In some forms the upturned part of the sole is very high. As examples, we might mention several varieties from Point Barrow[1] and the Mackenzie river district, or the extreme type used by the East Greenlanders;[2] in

[1] Murdoch, *Ninth Annual Report Bureau of American Ethnology*, Washington, 1892, figs. 77, 79, 80.

[2] *Arktiske Skinddragter*, pl. XIV, fig. 8.

other forms the upturned part is low, but still quite distinct, as in boots from lower Kuskokwim, Alaska, or boots used by the Eskimo of Smith Sound.[1] Another characteristic, widely distributed and found occasionally in almost every Eskimo locality, although generally not everywhere, is the use of the ankle band, which is drawn through loops, either cut out in the sole itself near the rim, probably the original device, or sewn into the sole seam. The ankle band itself is also in many forms sewn into the sole seam. In other words, the typical sole of Eskimo boots and shoes is like a sandal of the type mentioned (p. 197), bent up around the foot and provided with marginal loops through which a lace passes. This curious peculiarity of Eskimo footwear may be connected with the fact that a sandal is still used by the East Greenlanders[2] when hunting on the ice, and by West Greenland children in a certain game. It also may be brought together with an interesting incident in a traditional tale from the West Greenlanders recorded by Rink[3] about a tribe living farther to the north who used sandals and stockings for footwear in their ball games; and furthermore may be considered the narrative of a French Canadian voyageur,[4] who mentions a tribe living to the west of Hudson bay, that used sandals and stockings of skin for footwear. All these points taken together give some support to the hypothesis which I have set forth elsewhere,[5] that the Eskimo boots and shoes are derived from a more primitive form which consisted of a stocking and a sandal used together. By and by it became customary to sew the sandal onto the stocking, subsequently the bottom of the stocking itself, becoming superfluous, was omitted, and thereby the Eskimo type of footwear became fully established.

Mason seems to suggest another origin of Eskimo footwear. After having described the moccasin types which he terms "Athapascan," "Tlingit," and "Algonquian" types (our series VI, X,

[1] *Ibid.*, pl. XIV, figs. 5 and 11.

[2] Thalbitzer, *op. cit.*, fig. 314b.

[3] H. Rink, *Eskimoiske Eventyr og Sagn*, Kbh., 1866, p. 282.

[4] Given by Arthur Dobbs in his *An Account of the Countries Adjoining to Hudsons Bay*, London, 1744, p. 42.

[5] *Arktiske Skinddragter*, p. 179.

and VIII), he goes on to say: "These three forms merge into the Eskimo at the north and the low moccasins at the south."[1] Mason does not indicate in what way the moccasin forms may have changed into Eskimo footwear. It might, therefore, be worth while to examine the forms in question and see whether such a transition may be considered probable. We have been able to show that slight changes in form and construction, such as may easily be explained as results of a progressing improvement of older types, combine all the moccasin forms in our series I–X to one evolutionary group. Even XI and XII belong to this same group, although they show influence from other types of footwear. It remains to be seen whether similar slight changes can explain the differences between moccasins and Eskimo footwear.

If we assume that Eskimo footwear was evolved from moccasins, we will be confronted with one difficulty which, it seems to me, cannot be overcome. All moccasins have a heel seam in their bottom piece, either straight or, in the higher developed forms T-shaped from which the Eskimo footwear eventually may have been evolved. In Eskimo boots and shoes, on the other hand, the sole, which should correspond to the bottom piece of the moccasin, has neither toe nor heel seam (except in a few isolated instances where foreign influence is evident, as later demonstrated). It may be said that as the moccasins of series IX and X are without toe seam so in the course of evolution the heel seam might also be lost; this reasoning does not, however, hold good. We are able to show just how the toe seam is lost in some of the higher developed moccasin forms. This change is brought about by the insertion of an instep piece in the toe seam, at first gore-like, later in fully developed forms, broad and rounded. This explains quite satisfactorily the disappearance of the toe seam in series IX and X. A similar explanation could not be given for the disappearance of the heel seam were we to assume that Eskimo footwear was derived from moccasins. In fact, the T-shaped heel seam is such an ingenious device, that it has been distributed as far west as Lapland and as far east as Labrador. If once adopted it is lost only when

[1] Mason, *op. cit.*, p. 353.

the bottom piece of the moccasin is changed into a flat sole, as will be shown later.

If Eskimo boots and shoes were derived from moccasins, we should be able to find intermediate forms, such as in northern Asia serve to illustrate the way in which moccasins may in the course of evolution be transformed into boots. Such intermediate forms are, however, not found among the Eskimo.

Influence of Indian footwear upon Eskimo footwear is found only occasionally and must be considered as quite unimportant. On the other hand, we can also trace influence of Eskimo footwear upon Indian footwear, which is not much more important. It may be well to review the few facts belonging here.

It seems that the Eskimo of Labrador occasionally use moccasins of Indian fashion, even buckskin ones. As an example may be cited a moccasin of buckskin (IV. B. 274 V.M.M.), from the Eskimo of Hamilton Inlet, of a type belonging to series X, without top, but provided with a hemmed in drawstring around the opening, a form quite common among the Nascapee and Montagnais. In fig. 53 is shown another moccasin from the Eskimo of Hamilton Inlet (IV. B. 247 V.M.M.), of the same pattern as the beforementioned, but made of dehaired black sealskin (epidermis left intact), and the opening bordered with fur of the polar hare. In this example not only the material, but also the technique of sewing is distinctly Eskimo, although the pattern evidently has come from the Indians.

More curious is the form represented in fig. 54 (60/6712 A.M. N.H.), a shoe from the Eskimo of Banks Island, made of one piece of white dehaired sealskin, bent up around the foot and sewn onto a narrow gore-like instep piece of black dehaired sealskin. The heel has a T-shaped seam, and accordingly is constructed as in a moccasin; a narrow gore is inserted under the foot. This type is known also from Victoria Island (60/6240 A.M.N.H.), and from Prince Albert Sound (IV. D. 54 V.M.M.). The T-seam is, however, not as regular and well made as in Indian moccasins, indicating that we have here a poor imitation of the moccasin pattern. This assumption is furthermore confirmed by the fact

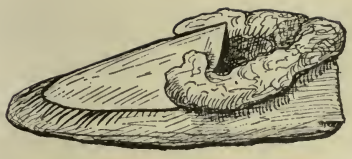


FIG. 53.—Eskimo, Hamilton Inlet. (V. M. M.)

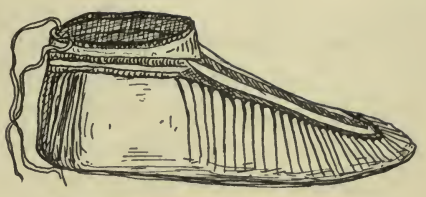


FIG. 55.—Eskimo, Anderson River. (U. S. N. M.)

FIG. 57.—Montagnais, Lake St. John. (V. M. M.)

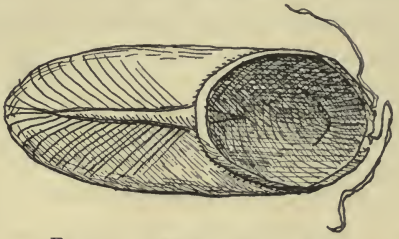


FIG. 54.—Eskimo, Banks Island. (A. M. N. H.)

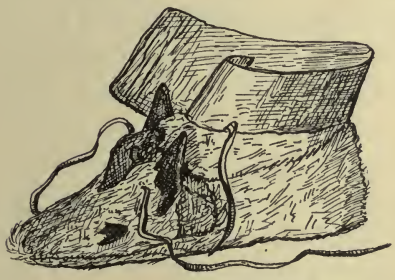


FIG. 58.—Iroquois, Grand River. (V, M. M.)

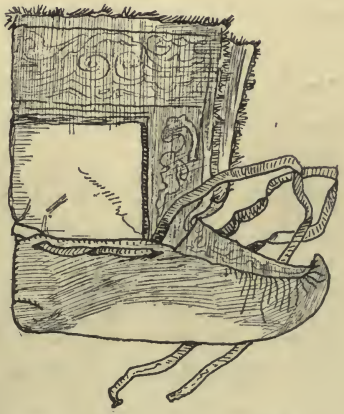


FIG. 56.—Montagnais, Lake St. John. (U. P. M.)

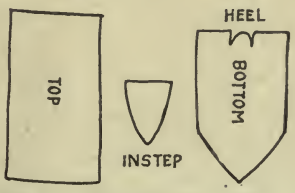


FIG. 59.—Moccasin from Amur. (P. A. M.)

that similar shoes without T-seam are found, as an example may serve, fig. 55 (2060 U.S.N.M.), from the Eskimo of Anderson river. It will be noticed that the sole has the regular Eskimo shape bent up around the foot with a great number of gathers in front and at the heel.

As the Eskimo occasionally may adopt or imitate certain characteristics of Indian footwear, so some of the northern Indian tribes, on the other hand, have occasionally taken over a few characteristics originally belonging to Eskimo footwear. Moccasins without top from the Nascapee, Montagnais, and even from the Ojibwa often have a hemmed in drawstring around the opening. This is probably an Eskimo trait, as a similar drawstring is found in most Eskimo shoes and boots, but is absent in the footwear of other Indian tribes. In the northern part of the Eastern Woodland area the Indians occasionally use moccasins with loops sewn into the seam between bottom and top, for the ankle band. This also may be a trait borrowed from the Eskimo, who often use such loops sewn into the sole seam. Instances of the use of regular Eskimo footwear by Indians are quite rare. The Indians of Badgers Brook, Newfoundland (a mixed population of Micmac, Montagnais, and perhaps Beothuk—according to F. G. Speck) occasionally use a sealskin boot of Eskimo type (III. F. 187 V.M.M.).

On the whole, it may be said that influences of Indian styles of footwear upon the Eskimo types of footwear, and vice versa are remarkably scarce and unimportant. The difference between the moccasins of the northern Indians and the boots and shoes of the Eskimo is, as a matter of fact, quite striking, and does not only disclose itself through a study of the patterns; the hard-soled footwear of the Eskimo is quite different in character from the soft, stocking-like moccasins of the Indians.

SERIES XXI. SHOES MADE OF LEG HIDE OF CARIBOU OR MOOSE, THE NATURAL SHAPE OF THE HIDE BEING UTILIZED

This series contains forms of unquestionably very great age. The idea of utilizing the legskin of large mammals for footwear is

exceedingly widespread. The Patagonians and Araucanians use the skin of the hind leg of pumas, guanacoes, and horses for boots, closing the hole made by the removal of claws or hoofs with a transverse seam.[1] The Eskimo at Fort St. James may use the hide of a bear's paw for a shoe without any seam whatever, the claws being left on (131095 U.S.N.M.). The Aino of Yezo make very rude shoes, using two split up legskins of deer sewn together so that one covers the under side of the foot and the heel, while the other forms a sort of upper (839, 47 P.A.M.). The Swedes on Runö may use the skin of the fore leg of a seal as a shoe.[2]

Footwear of a similar description, made of the legskin of moose and caribou, is quite common in the northern part of the Eastern Woodland area. Two general types are found here; one is made of the legskin drawn off whole and used in its natural shape, closed at the toe with a transverse seam. Fig. 56 (28942 U.P.M.) serves as an example of this type. A short boot from the Montagnais of Lake St. John is made from the skin of the hind leg of a moose; it has been much worn underneath and therefore is provided with two layers of patches, having the character of an extra sole; 2/8946 is a short boot of caribou legskin of the same style and from the same locality. The Victoria Memorial Museum also has examples of this style from the Montagnais of Lake St. John (III. C. 87 and III. C. 88). The type is known from the Malecite (III. E. 4 V.M.M.), the Micmac (III. F. 105 V.M.M.) and Penobscot (III. K. 54 V.M.M.) of Oldtown, Maine, where the custom prevails of cutting a median front slit, which is closed by lacing—evidently a modern innovation. F. G. Speck has described the type from the Huron.[3]

In the other type, which is also made from the legskin of caribou and moose, the skin is cut open (but not tanned or dressed), laid double and made into the shape of a shoe by means of two seams, one running along each side. As an example serves fig. 57 (III. C.

[1] *Arktiske Skinddragter*, p. 166, pl. XIV, fig. 1.

[2] A. O. Heikel, *Die Volkstrachten in den Ostseeprovinzen*, Helsingfors, 1909, p. 68, pl. XXIX, 9.

[3] F. G. Speck, "Notes on the Material Culture of the Hurons," *American Anthropologist*, (N.S.) vol. 13, p. 211, fig. 22.

212 V.M.M.), from the Montagnais of Lake St. John; the broader (upper) part of the legskin forms the heel (without heel seam) and sole; the narrow (lower) part of the legskin is turned up over the end of the foot and covers the upper side. The hair is turned inside. The sewing is done with sinew and the seam appears to be very tight; probably the shoe was made water-tight. From the Iroquois of Grand River reservation is known a somewhat more complex form represented in fig. 58 (III. I. 193, V.M.M.). Here all the four hoofs are left intact as a sort of decoration and a median slit between the two larger hoofs can be closed by means of a lace; the heel is given a better shape by cutting out a gore and closing with a vertical seam; and an extra top piece of heavy buckskin is added. The lateral seam remains, however, the main feature, following each side of the foot. In this form some influence from moccasin types may be present.

The preceding analysis of North American shoes has given us the following results:

The different forms may be arranged in twenty-one series, each of which contains forms of such structural similarity that they evidently must be regarded as varieties of one type. Fundamental similarities and intermediate forms between some of the series have furthermore led us to the conclusion that certain series must have been evolved from a common prototype. Accordingly, our series may be grouped together in larger evolutionary groups.

The first one of these groups includes series I–X; we will call this the *moccasin group*, because the forms for which the term moccasin originally was used belong here. It is a very rich, but well defined group. All the variations may be fully explained on the assumption that they have come into existence through small practical improvements upon the original type, such as would naturally have come about through the small experiences of daily use. We have been able to find intermediate types, showing how the T-seam and the instep piece probably came into existence. We may safely assume that all the forms in our moccasin group have actually been evolved from a prototype like fig. 10. Even

series XI–XII should be included in the moccasin group, although they are mixed types, showing influence from forms which do not belong in this group.

Series XIII–XVI constitute a second group, which seems to have been derived from forms like figs. 43 and 44. For want of a better term we might call this the group of *flat-soled shoes.*

There is some reason to suppose that series XVII–XVIII are evolved from a common prototype—because they have the same main characteristic, an upturned rawhide sole, and because they have practically the same area of distribution; if we assume that these types have a common origin, they would constitute a third group, in which we probably should include the not very numerous series XIX, although this series shows some extraneous influence. We might call this group "shoes with upturned soles," on account of its main morphological characteristic. Our hypothesis, that the prototype of the upturned sole has been a sandal with upturned rim and marginal loops, is supported not only by the peculiar shape of the sole, and by the ankle band which in some cases is put through the sole near its rim, but also by the fact that sandals of this character have been used in the Southwest. It therefore seems justifiable to use the word *sandal-boots* for our third group; and also series XX should be included here, as there are a number of good reasons for assuming that the Eskimo footwear has been evolved from sandals and stockings.

Series XXI must be kept separate. It contains forms of striking primitiveness; it seems, however, doubtful, whether higher forms ever have been evolved from these without influence from other types. Such influence, from true moccasin types, seems present in a form like fig. 58.

The main result of our analysis is the establishment of the *moccasin group.* None of our other groups of North American footwear show such a great variety of types and such a tremendous geographical distribution; at the same time the moccasin group is characteristically and radically different from the other groups. The geographical distribution of moccasins is of great interest. It may be roughly said that they have been used with preference

in all the well-wooded parts of the continent north of Mexico and that they have reached their highest development in the Mackenzie area and in the Eastern Woodland area. The Indians of the Northwest Coast often went barefooted, or, when they used moccasins, they often bought them from their inland neighbors.[1] Very primitive indigenous moccasin forms are, however, known from the Northwest Coast (*cf.* fig. 10). Primitive moccasins are also known from the California area and from the Southeastern area. In the Plains, the Plateau area, and the Southwest area other types of footwear predominate, with flat sole, or with upturned sole. True moccasin types occur, however, sporadically. An interesting primitive form is used in a dance by the Navajo,[2] and "medicine" moccasins of a primitive pattern are found also among the Osage and the Kiowa (*cf.* figs. 11 and 15). In the northern part of the Plateau and the Plains area we find the peculiar mixed types (series XI–XII), which must be interpreted as moccasins, influenced by the flat-soled footwear of the Plains.

The moccasin group gains added interest from the fact that footwear of moccasin pattern is known from northern Asia and Europe. These Asiatic and European moccasins must be studied before we can consider any theory as to the origin and history of the moccasin group.

II

Asiatic and European Moccasins

Moccasins are found in the Old World in two widely separated areas, Amur and Lapland. In both places the predominating moccasin patterns are similar to those which we have described from North America under series X. Also other interesting forms occur, some of which have their parallels in North America, while some are unique.

Moccasins from Amur.—Fig. 59 (313, 16 P.A.M.)[3] is a moc-

[1] Mackenzie, *Voyages from Montreal*, London, 1801, p. 371.

[2] A. M. Stephen, "The Navaho Shoemaker," *Proceedings U. S. National Museum*, XI, Washington, 1889, pp. 133–134, fig. 3.

[3] *Cf.* 32101, F.C.M., a very similar pair of moccasins from the Goldian tribes; they belong to a woman's costume.

casin from Amur, probably from the Golds. The pattern shows a striking similarity to our series X from North America (*cf.* fig. 24). Bottom, instep piece, and top are cut as in series X. In fact, if the shoe had come from North America, we should not hesitate to place it in series X. Peculiar is the pointed and curved shape of the toe which is produced by narrowing to a point the anterior parts of the instep piece and the bottom piece. The instep piece is remarkably short and has no free flap. The top is open in front and an ankle band is put through a series of holes near the upper rim of the bottom, as in American moccasins. The bottom is made of white tanned leather, stained red-brown except under the middle of the foot, where it is undecorated; the heel flap is bent upwards and attached by the horizontal part of the T-shaped heel seam. The anterior part of the bottom is finely puckered and the gathers are held in place by a series of stitches with a special sinew thread. The instep piece is made of bright red-colored leather. An ornament, cut out of thin white leather is sewn upon this bright red ground with black thread, a sort of appliqué-work. The top is made of two layers of coarse linen, decorated on the upper border and along the exterior side with appliqué-work in blue-colored thin leather and with a rim of black fur. As the ornamentation is unsymmetrical, the right and the left shoe cannot be interchanged, although the moccasin pattern itself is perfectly symmetrical.

Shoes of exactly the same shape and pattern as fig. 59, but made of fishskin, are known from the Golds, the Nigidal-Tungusians,[1] the Giljaks and the Aino of Sakhalin (examples in P.A.M.). The ankle band is often put through loops which are sewn into the seam between bottom and top. The top can be of a considerable height, even 25 cm., but is always open in front.

Rockhill has brought home from Mongolia a peculiar form. Fig. 60 (131202 U.S.N.M.) should be compared to the Amur moccasin. It is made of heavy ox-hide of a brown color, the de-

[1] *Cf.* Middendorff, *Reise im äussersten Norden und Osten Sibiriens.* IV, pp. 1528 and 1531. Illustrations of moccasins, without top, from the Nigidal-Tungusians. Footwear of fishskin is used in the Amur during summer only.

haired side outwards, and "in shape somewhat like an Indian moccasin" as Rockhill remarks. It consists of two pieces; the bottom is turned up around the foot, with a T-shaped heel seam, and in front sewn to the instep piece with a number of gathers. The sewing is done with long stitches of hemp thread. Rockhill says that these shoes are called *p'i-hai* in Chinese, and worn in the extreme western part of Kan-su by the poorer classes.[1]

Fig. 61 (32188 F.C.M.) is a peculiar moccasin type, from the Giljaks of Sakhalin; it belongs to a woman's costume. This moccasin consists only of bottom and top; there is no instep piece. The footing is made of one piece of sealskin; the top is made of a piece of linen cloth open in front except for the lower two cm., where it is closed by sewing. The toe seam is T-shaped, with horizontal branches of great length. The middle flap is very large, turned up over the end of the foot and with a considerable number of gathers sewn to the horizontal part of the T-seam (*cf.* the American moccasins figs. 13 and 21). The heel seam is Y-shaped.

Other moccasin patterns are known from the Giljaks and Aino of Sakhalin; but as they occur in boot-like complex forms, which might be called legging-moccasins, we shall have to consider them later on, when we come to deal with "transformed moccasins."

From the Aino not only fully developed moccasins of a pattern like fig. 59, but also some other remarkable types of footwear are known. We find here some exceedingly primitive forms, reminding us of our American series XXI; these cannot be interpreted as moccasin forms, as they are without the essential characteristic, the heel seam. We find other forms, which show a higher development and may have been influenced by moccasin patterns.

Fig. 62 (specimen in Nationalmuseet, Copenhagen) is a type of footwear used by the Aino of Yezo (examples are also found in P.A.M.). It is made of fishskin (salmon), cut open along the belly and placed, scaly side out, in such manner, that the back fin comes under the middle of the foot. The triangular skin of the tail is

[1] Rockhill, "Notes on the Ethnology of Tibet," *Report U. S. National Museum*, 1893, p. 746 and pl. 52, fig. 1.

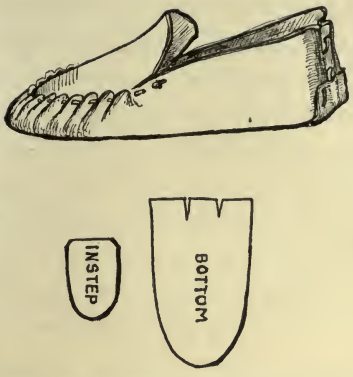


FIG. 60.—Moccasin from western Kansu, China. (U. S. N. M.)

FIG. 61.—Giljak moccasin, Sakhalin. (F. C. M.)

FIG. 62.—Ainò fishskin shoe, Yezo. (Nationalmuseet. Copenhagen.)

FIG. 63.—Aino fishskin shoe, Yezo. (U. S. N. M.)

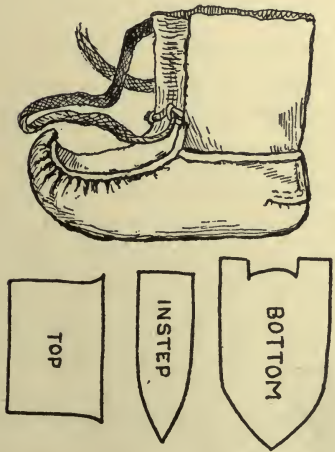


FIG. 64.—Lapp summer shoe.

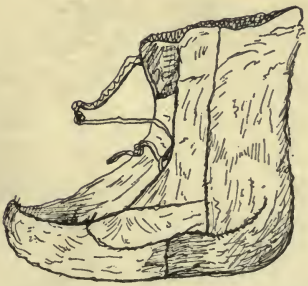


FIG. 65.—Lapp winter shoe of reindeer legskin.

bent up over the end of the foot and sewn to the belly skin which is bent up around the sides of the foot and joined in a median seam on top. No heel seam is found, but the skin is bent upwards behind and can be held in place around the ankle by means of a bast string. Another form is used by the Aino of Yezo in winter; it is a very clumsy shoe, consisting of two undressed legskins of deer, sewn together so that one makes the bottom of the shoe, while the other forms the upper. A median slit in the upper admits the foot. There is no heel seam, but this simple footwear is held in place around the ankle by means of a string drawn through a series of holes.

More highly developed is a type like fig. 63 (marked 4774 specimen in U.S.N.M., collected by R. Hitchcock, from the Aino of Yezo[1]); which has a special bottom piece bent up around the heel and the toe in a way reminding us of the construction of birchbark baskets by the Aino.[2] The material is fishskin, and the back fin is seen under the foot. Another kind of fishskin, with smaller scales, is used for the upper part of the shoe which is closed in front. A loop of blue cotton cloth is sewn into the seam behind and probably used for an ankle band. Although this form cannot be included in our moccasin group, on account of the lack of heel seam, it still is more complex and more highly developed than fig. 62. It seems not unlikely that the idea of making the shoe of two different parts, bottom and top, may have been due to a superficial knowledge of some moccasin pattern.

Moccasins from Scandinavia.—The typical summer shoe, used by the Lapps, may be seen in fig. 64. The bottom (north Lappish: *vuoδδo*, "bottom") is generally cut from tanned oxhide, so as to be sufficiently durable. The heel seam is T-shaped. The heel flap is not as in the Amur moccasin, fig. 59, visible on the outside, but is tucked inside and secured by the horizontal part of the T-seam. The anterior part of the bottom piece is pointed and sewn by a great number of gathers to the instep piece, which is

[1] Hitchcock, "The Ainos of Yeso, Japan," *Report U. S. National Museum*, 1890, plate XCVII and p. 451.

[2] *Ibid.*, fig. 72–73, p. 455.

also pointed; thereby is produced a pointed toe, curved upwards, exactly as in the Amur moccasin. The instep piece (*aldas*), made of tanned reindeer leather, is comparatively long, and forms not only the upper side of the footing, but also the anterior side of the top, where it is joined to the top piece by two seams. Consequently, the top is closed in front, whereby the Lapp moccasin differs from the Amur moccasin as well as from the American forms. The top piece is made of rather thin and pliable reindeer leather. By means of the shoe band or ankle band which is wound tightly around the ankle, the footwear is made so water-tight that a person can walk through a creek without getting his feet wet—when the shoes are as they ought to be. The legging or trouser leg is always put over the shoe top, before winding the ankle band around. Hay[1] is always used inside the shoe. The ankle band (*vuodda*) is peculiar to the Lapp footwear, different from the lace which is used in American moccasins and in the Amur moccasins. There is a leather loop sewn into the top seam in front on either side; the end of the ankle band is drawn through one of these loops and fastened to the other one, the loops are then pulled tightly together, and the free end of the band is wound around the ankle. Right and left shoes are alike and once in a while they are interchanged so that they will keep a better shape and last longer; but before interchanging them, the ankle band must be loosened and fastened to the other loop, while the band must always be wound around the ankle in the same direction: from the inner side of the foot forwards and outwards.

In spite of the peculiarities of the Lappish summer shoe, its likeness to the Amur moccasin, fig. 59, is striking, as well in outer appearance as in pattern. Without doubt, if the Lapp shoe was found in America instead of in Lapland, we should not hesitate to place it in our series X of American moccasins, where it would unquestionably belong on account of its pattern.

In winter the Lapps wear shoes of reindeer skin with the hair on.

[1] All the arctic tribes and many tribes south of the arctic in Asia and America use in their boots and shoes hay or substitutes such as dried leaves, deer hair, feathers, etc. See further my *Arktiske Skinddragter*, pp. 46–48.

These forms offer curious examples of the influence which the nature of the material may have upon the pattern. Two types are found; one (*nuttak*) is made of the legskin of the reindeer, in another (*gallok*) the material is the hide of the reindeer's head.

Fig. 65 is a *nuttak* (south-Lappish: *nuedak*) from Härjedalen. For each shoe two legskins are used, from a fore leg and a hind leg of a reindeer. The skin of the foreleg forms the back of the top, the heel and the posterior part of the sole; a gore is cut out on each side to produce the necessary rounding of the heel. That part of the legskin which on the reindeer covers the wrist (the Lapps call this the reindeer's knee) is thereby very appropriately used for a heel in the shoe, being exceedingly thick and heavy; likewise the rather heavy hide between the reindeer's wrist and hoofs forms the posterior part of the sole. *Ruojas*, the word used for the top in the summer shoe is the name used for this large hind piece in the *nuttak*. The anterior part of the sole (by the southern Lapps called the "bottom" of the shoe) is the lower part of the skin of the reindeer's hind leg, placed so that the hair points backwards. The instep piece (*aldas*) is made from the upper part of the skin of the hind leg. In each side of the shoe gores are set in. The hair on the upper part of the top is cut so that legging or trouser leg may be more firmly secured to the top of the shoe by means of the ankle band which is put on exactly as in the summer shoe. The pattern of the *nuttak* varies in different parts of Lapland; the Finnish and the Russian Lapps may insert a special rounded heel piece in which case the top piece is as short as in the summer shoe.

The other type of winter shoe (*gallok*) is made from the skin of a reindeer's head. This raw material is shown in fig. 66, extended by means of sticks. It is divided in two halves by a cut along the dotted line. The larger half, which is the skin from the upper side of the head (face, forehead, and top of the head), is used for the bottom of the shoe; the flap *a* is bent upwards and joined to *b*, *b*, which is the hide between horn and eye. The two incisions between *a* and *b*, *b* are closed by the two vertical heel seams; these incisions have come from the skinning and indicate the places where the horns used to be. The three pointed flaps *c*, *c*, *c*, separ-

ated by the two incisions which are due to the nostrils, are joined by means of two seams and form the toe of the shoe. A cut is laid from each eye-opening upwards, following the dotted lines; and the two flaps thus produced, *d*, *d*, reach gore-like up in the sides of the shoe. The skin from the lower part of the head is, after a little trimming, used for the top piece (*ruojas*). Nothing is then left of the headskin and the instep piece (*aldas*) must accordingly be made separate, generally from a piece of reindeer legskin. In each side of the top a gore is added. Fig. 67 shows a *gallok* from Härjedalen; it is turned inside out in order to show the pattern more distinctly. Unimportant variations of the pattern occur. These *galloks* are an exceedingly warm kind of footwear, because the skin of the reindeer's head is particularly heavy and well haired. They are worn in the hardest part of the winter and they are also sold to and highly valued by the sedentary population in Lapland. *Galloks* for sale are made from the headskins of large reindeer; for their own use the Lapps make *galloks* of the headskins of younger and smaller deer, on account of the remarkably small size of their feet.

Both types of winter shoes are of exactly the same outer form as the summer shoe. There can hardly be any doubt that the summer shoe represents the original pattern, which in the winter shoes has been changed on account of the peculiar material used. It will be noticed that the Lappish words for top and instep pieces are the same in the case of the winter shoe and the summer shoe. On the other hand, the patterns in *nuttak* and *gallok* show a high degree of development; it would hardly be possible to use the material at hand in a more perfect manner. Even the way in which the reindeer legs and head are skinned is determined by the use to which the material afterwards is put. It might be tempting to compare the *nuttak* and *gallok* with the North American deer hoof shoes which we have placed in our series XXI; I think, however, that it would hardly be possible to point out any valuable points of likeness in the patterns concerned. If the Lapps ever had primitive shoes like the American forms in series XXI, they have long ago disappeared. It is of course quite probable that the

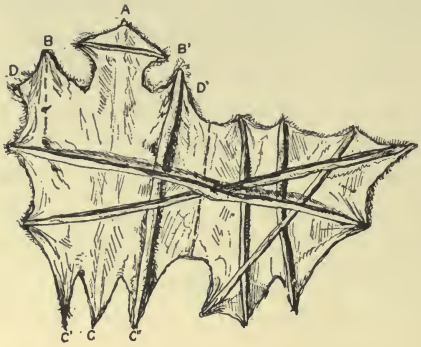


FIG. 66.—Skin of reindeer's head, extended.

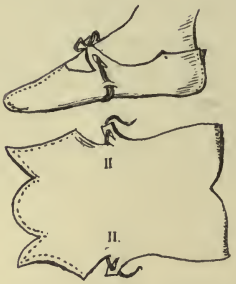


Fig. 69.—Old-Germanic shoe, Oberflacht, Swabia.

FIG. 70.—Shoe from Shetland Islands. (U. S. N. M.)

FIG. 68.—"Hussko," Dalarne, Sweden.

FIG. 67.—Lapp winter shoe of reindeer's headskin.

FIG. 71.—Chilkat, Lynn Canal. (U. P. M.)

ancestors of the Lapps used the legskins and the headskin of the reindeer for shoes of a more primitive pattern, like the Aino of Yezo or the Huron of Ontario; but the *nuttak* and *gallok* of today are types which show such high development, that they simply could not be improved. It cannot be denied that the winter shoes are made as far as possible in the likeness of the summer shoe; and their characteristic pattern is evidently due to the nature of the material. As the summer shoe has a true moccasin pattern, the *nuttak* and the *gallok* accordingly should be regarded as "transformed" moccasins.

Footwear of Lappish type has from old time been used also by the sedentary population in Lapland and some of the adjoining lands. The Lappish summer shoe is used to a great extent, also by the non-Lappish part of the population in northern Sweden and Norway and in modern times this sort of footwear is even made in factories. In northern Finland the so-called *pjekser*, of the same form and cut as the Lappish summer shoe, constitutes part of the national costume. I have no material which would throw light upon the question whether this moccasin pattern is as old among the northern Finlanders as among the Lapps. It seems probable that the northern Scandinavians have borrowed it from the Lapps.

In southern Scandinavia this type of footwear seems never to have been in use. In the districts where the Lapps come in contact with the Scandinavians, it has, however, been used by the sedentary population from an early date. Linnæus writes in the diary which he kept on his Lapland journey in 1732: "As soon as I came into Wästerbotten, I observed that people had on their feet a sort of shoe, called *kängor*;" and from a pattern, which he gives of the *kängor*, they are readily seen to be Lappish summer shoes.

Just south of the Lapp districts, however, we find among the peasants, an interesting old type of footwear, which, although it has a sort of moccasin pattern, is quite different from the Lapp shoe.

The peasants in northern Dalarne have until lately used primitive shoes, called *husskor* (*i. e.* "house-shoes"), worn not only in the house, but also in summer in the fields. Fig. 68 shows such a

house-shoe (drawing made after a specimen kept in a little local museum in the old Särna church, Dalarne). The material is horse-hide, probably legskin, with the hair outside; in other specimens the material is tanned leather. It consists of two pieces, a bottom and an instep piece, the first one bent up around the sides and the end of the foot. The heel seam is vertical and simple, not T-shaped as in the Lapp shoe; it is not sewn with sinew as is the Lappish footwear, but with a leather thong, and the stitches are different from those used by the Lapps. In front the bottom is sewn with a leather thong to the instep piece, which ends in a little free flap. There is no top. The shoe can be drawn together around the ankle by means of a lace, drawn through a series of holes near the rim of the bottom and two holes on each side in the instep piece. The sole is strengthened by two patches, one under the heel and one under the anterior half of the foot, sewn on by means of pine-roots.

This "house-shoe" differs considerably from the Lappish shoe. There is no top; all the seams are sewn with leather thongs instead of sinew; the toe is neither pointed nor curved upwards; the heel seam is not T-shaped, but straight; there is no shoe band like that found in the Lapp shoe, but a lace, similar to those found in many American moccasins.

The "house-shoe" is evidently related to a still more primitive type of footwear which also until lately has been used occasionally in northern Dalarne: an oval piece of skin, turned up around the foot and held in place around the ankle by means of a drawstring through holes near the rim. This simple type is old in northern and middle Europe. Weinhold writes:

> Der Schuh galt im Norden für durchaus notwendig. Er besteht ursprünglich, wie es scheint, aus einem Stück Leder, dass nach dem Fusse geschnitten und oben durch Riemen zusammengebunden ward. In den schwäbischen Gräbern am Lupfen hat man derartige gefunden.[1]

In a moor in East Friesland were found together with a skeleton, probably from the 8th or 9th century A.D., a pair of shoes, or rather sandals, each consisting of a piece of raw oxhide, without

[1] Karl Weinhold, *Altnordisches Leben*, Berlin, 1856, p. 164.

any sewing, laced on top of the foot.[1] Dutton figures several examples of old-Germanic footwear, found in Holsten, East Friesland, and the province of Drenthe, Holland; they are all of this simple type, consisting of one piece of skin, bent up around the foot and laced.[2]

In some cases this primitive footwear is without any seam whatever. In other instances there are heel and toe-seams. As an example might be cited fig. 69, an old-Germanic shoe, found near Oberflacht in Swabia.[3] It consists of one piece of leather, having a straight heel seam and a T-shaped toe seam. A shoe found in Thorsbjerg moor in the former Danish crownland of Slesvig shows another variation, having a well-developed T-shaped heel seam.[4]

Footwear of this description is by no means exclusively Germanic; it is also known from the Baltic provinces, where it still belongs to the national costume of the Esthonians and the Letts, as well as that of the Swedes of Runö and Rogö, according to Heikel, who names this footwear *pastel*, after the Lettish word *pastala*. Heikel describes how such a *pastel* is made of an oblong trapezoidal piece of leather, cut after a special pattern board and drawn together around the foot by means of a drawstring put through a series of holes near the rim. This *pastel* has in some cases a median toe seam, but is without heel seam.[5]

In the Caucasus and in Iceland, primitive footwear of a similar description may still be found in use. It is also known from the Shetland Islands. Fig. 70 (175473 U.S.N.M.) is an example from Fair Isle, consisting of a piece of raw horsehide, bent up around the foot, with a short straight heel seam, and a similar toe seam, and a lace or ankle band put through a series of holes near the rim.

These examples of old European footwear would afford a

[1] *Annaler for nordisk Oldkyndighed*, 1842–43, København, 1842, p. 176 and pl. VIII, fig. 4.

[2] W. H. Dutton, *The Boots and Shoes of our Ancestors*, London, 1898, pl. II, 5, 6, 8.

[3] Fig. 69 is taken from fig. 209 in Hermann Weiss, *Kostümkunde*, Sec. ed. Stuttgart, 1883, II, p. 322.

[4] C. Engelhardt, *Thorsbjerg Mosefund*, København, 1863, p. 19, and pl. 3, fig. 1.

[5] A. O. Heikel, "Die Volkstrachten in den Ostseeprovinzen," *Société Finno-Ougrienne, Travaux ethnographiques*, IV. Helsingfors, 1909, I, pp. 67–68, II, p. 108, pl. XXIX, fig. 2, 3, 5, 6.

splendid illustration to O. T. Mason's words: "The shoe is a sandal, that has grown up over the foot."[1] In fact, the forms which we have described might as well be named sandals as shoes. On the one hand, they are strikingly similar to certain aboriginal sandals from the South American Andes and the Pampas;[2] on the other hand, the presence of toe and heel seam marks them as somewhat higher developed forms and in some instances they cover a considerable part of the upper side of the foot. At the end of this paper we shall consider the question, whether forms like these have played any part in the evolution of the moccasin group.

There can be no doubt that the "house-shoe" from Särna has a close relationship to the described old European forms. If only the instep piece were taken away, we would have a form not unlike those found in the moors. The instep piece, however, may perhaps be due to an imitation of the Lapp shoe pattern.

The very fact that the old Scandinavians used footwear of a type far below that of the Lapp shoe, shows conclusively that the Lapps have not borrowed their footwear patterns from the Scandinavians. If the Lappish moccasin was evolved from forms like the north European sandals, then this evolution did not take place among the Scandinavians. When the peasants in northern Sweden and Norway use Lappish footwear, this must be considered as a cultural loan from the Lapps.

The fact that the Lapp moccasin shows such striking similarity to the Amur moccasin and that the patterns of both are so much like those of our American moccasin series X is very remarkable. The question arises: have these three moccasin-areas always been disconnected and independent of each other? Or is it possible to find traces of the moccasin group in any of the footwear types used in the intervening regions?

This leads us to an analysis of certain forms, which illustrate how moccasin types may be transformed into higher developed types of footwear.

[1] O. T. Mason, *Primitive Travel*, etc., p. 310.

[2] O. T. Mason, *op. cit.*, p. 368, fig. 70. Ch. Wiener: *Pérou et Bolivie*, Paris, 1880, p. 679. G. C. Musters, *At Home with the Patagonians*, London, 1873, p. 170. My *Arktiske Skinddragter*, pl. XIV, 1.

III

Transformation of Moccasins

The term "legging-moccasin" has often been used by ethnologists to designate certain boot-like forms worn by the tribes of the Southwest and by some tribes in the Plains, mostly as an element of the woman's costume. This term expresses the idea that the forms mentioned were evolved through a combination of legging and shoe and the patterns of some of the forms in question give very good support to such a hypothesis. The "legging-moccasins" of the Southwest and the Plains do not concern us here, because the shoe types involved are not true moccasins in our sense of the word. Some of the types in our moccasin group are, however, found combined with leggings and in that way has been developed a large and important group of forms. This group which I have called "moccasin-boots" plays a great rôle in northern Asia and also occurs in the northwestern part of America. We shall consider first a few American forms.

Moccasin-boots in North America.—Fig. 71 (2/9102 U.P.M.) is a moccasin-boot from the Chilkat Indians of Lynn canal, Alaska. The bottom piece or sole, made of a sort of half-tanned rawhide, is cut exactly like the bottom of a moccasin of series X; it has a T-shaped heel seam and is turned up over the toe with some puckering and sewn to a short instep piece. Top and instep piece are both made of buckskin. The length is about 40 cm. Probably the prototype of this high top was a loose legging; if it had been derived from the top piece of a moccasin, we should then have expected to find the top seam in front, instead of along one side as is the case. The boot is ornamented with quillwork along the front and around the ankle; this reminds us of the ornamentation of the trousers combined with footwear which are used by the Athapascan tribes of Alaska. The same pattern as in fig. 71 is found in a child's boot from the Tahltan Indians, represented in fig. 72 (VI. H. 33 V.M.M.); the material is smoked buckskin. The bottom or sole has a well developed T-shaped heel seam, with the middle flap protruding. There is a short instep piece and the

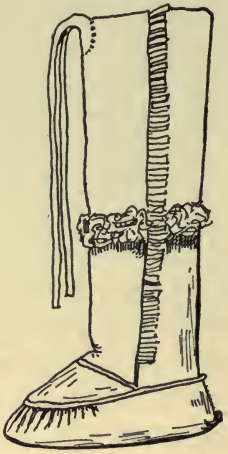


FIG. 72.—Tahltan. (V. M. M.)

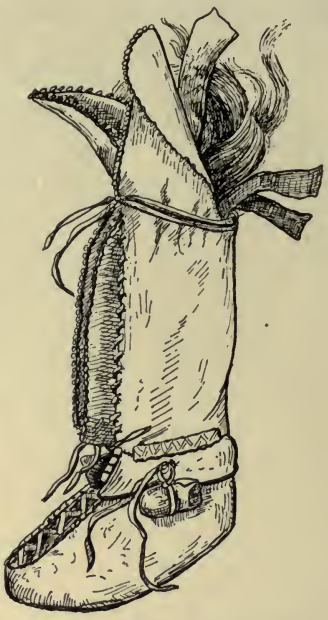


FIG. 74.—Object from sacred bundle of Winnebago. (U. P. M.)

FIG. 73.—Kutchin or Nahane man's trousers. (Peabody Museum.)

FIG. 75.—Aino, Sakhalin. (P. A. M.)

top has a lateral seam ornamented with a leather fringe; a garter is attached, made of twisted sinew and soft feathers. In front above are two leather bands for tying.

Fig. 73 (2082, Peabody Museum) is a pair of man's summer trousers from the Kutchin or the Nahane, upper Yukon region, collected in 1867–8. They are made of dressed caribou skin and ornamented with quillwork. They are figured here because of their lower part which is made very much like figs. 71 and 72. The bottom, or sole, has a well developed T-shaped heel seam, and is in front turned up over the toe and sewn to a short instep piece.

The characteristic cut of the bottom piece in the forms figs. 71, 72, and 73 must no doubt be due to influence from the pattern of the moccasin series X. It seems that this influence is best accounted for by assuming that the forms described have been derived from moccasin and legging and constitute true "legging-moccasins."

It is not necessary to let the bottom piece or sole in a boot cover such a large part of the foot as in the moccasin. The more closely the bottom piece approaches the form of a flat sole, the less necessary or convenient becomes the heel seam. We know from northwestern America a considerable number of boots and trousers ending in boots having a nearly flat sole without any trace of the T-seam[1]—although they are in every other respect entirely similar to the forms with T-seam. We must assume that the prototype of all these forms were legging and moccasin and that the T-seam in the course of evolution became useless and disappeared, although it is still to be found in rare instances.

The idea of combining legging and moccasin may perhaps have been more widely spread in America than is indicated by the examples above. A paint bag from the Potawatomi Indians of Kansas (2/7802 U.P.M.), is made in the shape of a diminutive legging-moccasin; the pattern of the moccasin part belongs to our series II; the heel seam accordingly is T-shaped, the middle flap protrudes and is cut into four "trailers." There is an ankle flap on each side. The legging part has a seam behind and ends above in four flaps. Very similar is an object belonging to a sacred bundle from

[1] As an example see *Arktiske Skinddragter*, pl. XI, 10.

the Winnebago Indians, represented in fig. 74 (2/9111 U.P.M.); it is a little buckskin bag containing a bunch of human hair. The lower part of it is shaped as a diminutive moccasin of a pattern belonging to our series I, very much like the type represented in fig. 6; there is a short ankle flap on each side, with a diminutive bundle attached. To this moccasin-like part is sewn a legging-like part, consisting of a piece of buckskin with an ornamental seam in front, ending above with two flaps.

Moccasin-boots in Northern Asia and Europe.—In Amur several moccasin patterns are found combined with leggings. The most important pattern is the same as fig. 59. A great variety of forms is, however, found on Sakhalin. On the mainland an interesting series shows very plainly how the moccasin boot by and by loses the moccasin characteristics.

Fig. 75 (700, 45/2 P.A.M.) is a child's boot from the Aino of Sakhalin. The footing is made of a piece of dehaired skin, with a straight heel seam and a straight toe seam, both of which reach a little ways in under the foot. It will be noticed that the pattern of the footing is very much like the pattern of the moccasin fig. 5, belonging to our American series I. The legging part is made of one piece of sealskin, hairy side out, and has a longitudinal seam behind. Above is a rim of sealskin with the hairy side in. A man's boot from the Aino of Sakhalin, 32116 F.C.M., is made of fish-skin but has the same pattern as fig. 75.

Another moccasin pattern is seen in fig. 76 (32117 F.C.M.), a boot from the Giljaks of Sakhalin. Here we have a moccasin part, consisting of bottom and instep piece and a legging part. The bottom is made of dehaired sealskin with epidermis left intact and therefore of a black color and water tight. The triangular instep piece is made of dehaired sealskin which also has been deprived of the epidermis; the middle part of the skin is pinched so as to form an outstanding median line. It will be noticed that the pattern of the footing is of a type which would belong to our American series VI (compare fig. 18). The heel is, however, shaped more like a Y than a T and this form is produced by making the heel flap triangular; it has been necessary to enlarge the heel

flap with a special piece. The legging part is patched together out of several pieces of sealskin, hairy side out, and has a 3½ cm. broad rim above made of sealskin with the hairy side in. A mocca-

FIG. 76.—Giljak, Sakhalin. (F. C. M.)

sin boot of the same type (700, 142 P.A.M.) is known from the Aino of Sakhalin; it is made of dehaired sealskin, the heel seam is T-shaped, and the instep piece or vamp has not the outstanding median line.

Still another type of the moccasin-boot is seen in fig. 77 (202, 54, P.A.M.), from the Giljaks of Sakhalin. The footing consists of heavy dehaired sealskin (*Phoca barbata*), the legging part of sealskin with the hairy side out. The characteristic moccasin pattern of the footing reminds one strongly of the Giljak moccasin,

fig. 61, but differs from this by having an instep piece with an outstanding median line. The pattern of the footing should be compared to fig. 21, belonging to our American series VIII.

FIG. 77.—Giljak, Sakhalin. (P. A. M.)

More important is the type represented in fig. 78 (829 391 P.A.M.); the specimen has come from the Aino of Sakhalin. The footing, made of heavy dehaired sealskin, consists of bottom and instep piece of a pattern almost identical with that of the Amur moccasin, fig. 59; the only difference is that the heel seam is

shaped more like a Y than a T. The top, made of sealskin with the hairy side out, cannot have been derived from a moccasin top, because the longitudinal seam is not placed in front but behind; it must have been derived from the separate legging still in use among the natives of Sakhalin and Amur. It would offhand seem probable that the moccasin might be changed into a long boot by a simple elongation of the moccasin top; of that, however, no instance is known to me.

The moccasin-boot may undergo further transformation and thereby lose all of its moccasin character. I have mentioned above, that certain kinds of footwear in northwestern America betray their evolutionary origin by having a T-shaped heel seam, while other forms which probably had the same origin have lost this mark. We shall now consider from the Orotchon and Lamut certain transitional forms, showing just how the last trace of the moccasin pattern may become lost.

Fig. 79 (1854, 14/2 P.A.M.) is a man's winter boot from the Orotchon (in summer moccasins and separate leggings are worn by this tribe[1]). The sole, made of heavy leather, is cut like the bottom in a moccasin of series X and has accordingly a T-shaped heel seam; in front it is turned up over the toe and sewn onto the instep piece which has a similar outstanding median line as in the Giljak boots, figs. 76 and 77. The legging part is made of one piece with a longitudinal seam behind; the material is mooseskin with the hairy side inward. It will be noticed that the bottom piece is lower, more like a sole, and the instep piece higher than in the above-described moccasin-boots.

A similar pattern is found in the Orotchon man's boot, fig. 80 (1854, 15 P.A.M.). The top, however, has in this case a different pattern, due to the material which is legskin of reindeer. The anterior piece in the top reaches out over the foot to the toe, where it is joined to the sole. Another legskin forms the posterior part of the top and in each side is placed a half legskin. Between sole and top on each side is placed a horizontal gore of the same material. The top is ornamented with an embroidered border.

[1] See Gerstfeld in Erman's *Archiv*, XVII, pp. 583–584.

These two forms, figs. 79 and 80, may be taken as the starting points for two evolutionary series which include a large number of

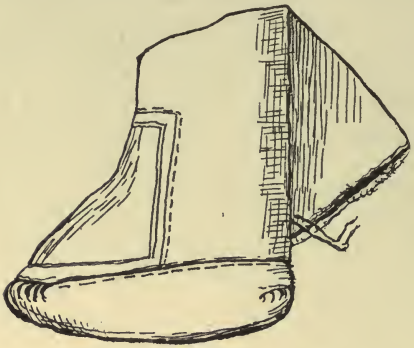


FIG. 79.—Orotchon man's winter boot. (P. A. M.)

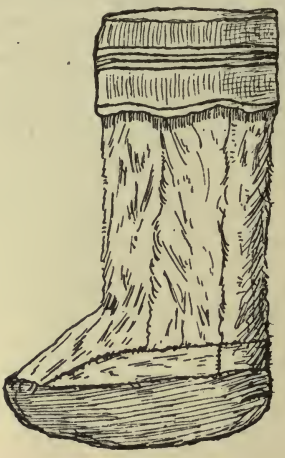


FIG. 80.—Orotchon man's boot. (P. A. M.)

FIG. 78.—Aino, Sakhalin. (P. A. M.)

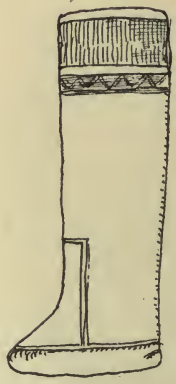


FIG. 81.—Orotchon. (P. A. M.)

boot forms, distributed over the greater part of northern Asia. The two series differ with regard to material, this being in one series ordinary haired or dehaired tanned reindeer or moose skin, in the

other series legskin of reindeer or moose. I would call the first one the *soft leather series*, the other one the *legskin series*. The T-shaped heel seam has disappeared in most of the forms of both series, because the bottom piece has been changed into a flat sole. In all other respects forms with T-seam and without T-seam may be quite alike.

In some Orotchon soft leather boots the T-shaped heel seam is exceedingly small; as an example fig. 81 (1854, 20/2 P.A.M.) might serve. In others there is no T-seam at all and the sole is rather flat. This is the case with most soft leather boots used by the other Tungusian tribes. As a typical example, see fig. 82 (1524, 210/2 P.A.M.), a long soft leather boot used by a Tungusian shaman in the district of Turuchansk. The sole is here almost flat and sewn to the top with slight puckering before and behind. The instep piece reaches with a gore-like point up into the anterior side of the top. This is made of one piece with a longitudinal seam along one side and is provided with two ankle bands, a pair of bands under the knee, and two bands in front which are used for attaching the boot top to a loop in the trousers.

Soft leather boots of Tungusian pattern are also used by the Yukaghir; but I do not know any instance from the Chukchee and the Koryakn or from the Ostyak, Vogul, and Samoyed. The Yakut wear soft leather boots which, however, have a peculiar long pointed gore stretching from the anterior part of the sole up through the upper part of the footing; this peculiarity probably came from old Turkish footwear. It is quite possible, therefore, that the Yakut soft leather boot has nothing to do with the Tungusian moccasin-boots.

The legskin series starts with forms like fig. 80 and fig. 83 (334 85 P.A.M.), the last-mentioned is said to have come from the district of Wiljuisk, but is of a decided Lamut type. The sole is of rawhide and has a T-shaped heel seam. The upper consists of white reindeer legskins; there are four legskins in the top, the anterior one of which stretches out over the foot and is continued by a trapezoidal piece, joining the sole at the toe. On each side, between the top and sole is inserted a gore of legskin, as in the

Orotchon boot, fig. 80. Right over the toe is inserted as an ornament a little quadrangular piece of skin, the seam marked with red cloth. The top has an ornamental border, decorated with beadwork (a similar form from the Lamut near Ochotsk, kept in the Nationalmuseet, Copenhagen, has a beautiful border with elaborate slit embroidery).

Many Lamut boots of reindeer legskin have no T-seam at all; this is the case in fig. 84 (724, 4/2 P.A.M.) which in every other respect shows striking resemblance to fig. 83. In a long legskin boot from the Lamut of the Anadyr district (445, 1/5 P.A.M.), the sole differs still more from the bottom piece in a moccasin, being patched together out of a number of small pieces of skin which are taken from between the hoofs of the reindeer, an exceedingly durable material, much used for boot soles by the Siberian tribes.

Boots made of reindeer legskin are used by all the Siberian tribes. I shall not here attempt to describe the different forms, but only mention the most important points. The boots of reindeer legskin show certain local variations, the most important of which is, that the Ostyak, Vogul, and Samoyed make the boot top of six longitudinal strips, while the Tungusian tribes, the Chukchee, and the Koryak make the boot top of four strips. In the construction of the footing, however, such striking similarity prevails, that the assumption would seem probable that all these forms have had one common origin.[1] This gains in interest by the fact that although the Eskimo tribes also use boots made of reindeer legskin, these forms are strikingly different from the Siberian legskin boots, as they have the usual sandal-like Eskimo sole and lack the system of horizontal gores, so characteristic of the upper part of the footing of the Siberian forms.[2]

The Lapps of Scandinavia make a sort of moccasin boot, consisting of a Lapp shoe combined with a legging; but it seems that such forms always were made exclusively for sale to the sedentary

[1] See further *Arktiske Skinddragter*, pp. 203–7.

[2] Compare figs. 80, 83, and 84, and *Arktiske Skinddragter*, pl. XVI, 7, 8, 9, 10. 11, 12, to pl. XIV, 9, 10, 11.

population.[1] In Russian Lapland the Lapps make a peculiar sort of combination of trousers, leggings, and shoes; (an example of this type

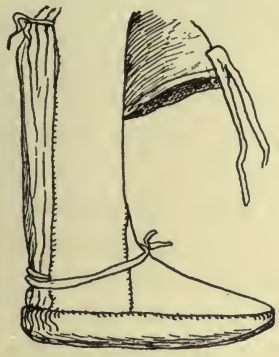


FIG. 82.—Tungusian boot. (P. A. M.)

FIG. 83.—Boot, Lamut type. (P. A. M.)

FIG. 85.—Vakhan boot. National-museet, Copenhagen.

FIG. 84.—Lamut boot. (P. A. M.)

is found in P.A.M. 343, 44); the footing is made of the skin of a reindeer's head, like the *gallok* in fig. 67, and the legging part is made of four reindeer legskins.

Our study of the "moccasin-boots" has given the following important result: In northern Asia as well as in northwestern

[1] Knud Leem, *Beskrivelse over Finmarkens Lapper*, Copenhagen, 1767, p. 81.

America are found boot forms which by certain peculiarities, especially the T-shaped heel seam, betray themselves as derivatives of the moccasin group. These "moccasin-boots" may by further transformation lose the last vestige of their origin. It seems that a great proportion of the footwear types used by the natives of Siberia have in that way been derived from the moccasin group.[1] As the fully developed boot forms have lost the moccasin pattern, it is impossible to prove with certainty that all the "soft leather boots" and "legskin boots" of Siberia are moccasin-boots. It is, however, probable that the greater part of the forms in question have originated as moccasin boots, just as we may assume, that the combined boots and trousers of the northwestern Athapascan tribes contain in their footing an element which originally was a moccasin.

The great gap between the American moccasin area and the Asiatic moccasin area, Amur, is thereby explained as due to the fact that the higher forms of footwear, developed from the moccasin, have ousted the moccasin itself, on account of a severe climate; and in the same way we may account for the still greater gap between Amur and the European moccasin area, Lapland.

IV

Origin of the Moccasin Group

In the study of a cultural phenomenon, the following problems are always present: What were the prototypes from which the forms in question have been derived? What were the forces and circumstances that brought about the evolution of the forms? In what locality, or localities, did the forms arise, and what were the roads and ways of their spread from their place or places of origin?

All that an ethnologist can do is to read and try to interpret the traces of bygone history which are represented in the forms themselves, their use, and their geographical distribution. The answers

[1] Certain types of footwear used in northeastern Asia as well as a certain form of boot used by the Vogul of western Siberia have not been derived from moccasins, but form a combination of stocking and sandal; see *Arktiske Skinddragter*, pp. 187–189, 194–195, pl. xv, figs. 1, 2, 3, 7.

which he finds will always have *some* value, always throw *some* light on the history of human culture, provided that the analysis has been careful and systematic. No ethnologist, however, has had material enough to solve beyond dispute all the questions which present themselves. When he nevertheless tries to find answers, these necessarily must have the nature of guesses and hypotheses, which give him some satisfaction and may stimulate others to do further analysis. The study of primitive clothing is, indeed, a young branch of ethnology, and although, as I think, some light has been thrown upon the history of the evolution of clothing, much still remains obscure.

With regard to the moccasin group, one of the difficulties is the following: although the present distribution of moccasins is probably known to us, we do not know what distribution the moccasin group may have had in former times.

From Assyrian reliefs one might get the impression that a part of the soldiery of the old Assyrian kings wore some sort of moccasins. The kings themselves and most of their warriors wear sandals; but some of the warriors and also some of the foreigners represented wear boots, in which the sole seems to reach up around the sides of the foot.[1] Mason has compared these to the Lapp footwear;[2] and in fact, some of the boots represented on the Assyrian reliefs have pointed toes, curved upwards, like the Lapp moccasins.[3] Footwear with similar pointed and curved toes is represented also on many stone reliefs from Asia Minor, especially from Cappadocia,[4] "souliers à pointe relevée et recourbée en arrière, qui rapellent ce que l'on appelait en quinzième siècle les souliers à la poulaine." Perrot is of the opinion that footwear of this type at one time predominated all over Asia Minor. It was also found in Italy; on Etruscan wall paintings similar footwear is represented.

Reliefs and wall paintings give, however, an exceedingly poor

[1] See A. H. Layard, *The Monuments of Niniveh*, London, 1849, pls. 40 and 78; A. H. Layard, *Niniveh and its Remains*, London, 1849, II, p. 337.

[2] O. T. Mason, *Primitive Travel*, etc., pp. 321–322.

[3] Layard, *Monuments*, etc., pl. 40.

[4] G. Perrot, *Guillaume et Delbet, Exploration archéologique de la Bithynie*, etc., Paris, 1872, I, pp. 159–160.

kind of information about the pattern of footwear. It is, in fact, impossible to decide whether the boots and shoes represented had a moccasin pattern or not. Footwear with upturned toe is known from Asia Minor and Central Asia of modern times; but in none of the cases which I have had the opportunity to observe would the term moccasin be appropriate, and moreover I have not been able to find any peculiarity in the forms of footwear from these regions which would support a theory of their derivation from a moccasin prototype.

From Pamir and Tibet we know a number of boot forms of a rather primitive appearance; their patterns do not, however, suggest any relation to the moccasins, but rather to another primitive form: a sandal with upturned rims combined with a soft stocking. The pattern of a boot from the Vakhans of Pamir, fig. 85 (67 National-museet, Copenhagen), is of interest in this connection. The top, consisting of two pieces of thin brownish leather connected by a median seam in front and behind, does not stop at the rim of the sole, but is continued down under the foot where the median seam runs from heel to toe, and forms in that way a whole skin stocking, to which is attached the sole which is made of a piece of heavy leather, turned up along the rim and puckered, ending in an upturned point in front. This is, in plain fact, a sandal sewn to a stocking and might well be called a sandal boot. The part of the stocking covered by the sole is of course rather useless; and it is omitted in another example of this boot type (same catalogue number, National-museet, Copenhagen). But the fact that it is found in one case looks very much like a survival, or a trace of the history of the evolution of the type. The upturned sole of heavy leather or rawhide is also characteristic of some forms of Tibetan boots.[1]

The material at hand enables us to say that the moccasin group has *not* furnished the prototypes for all the forms of footwear, which we find in Central Asia and Asia Minor; it is even quite probable that *none* of them were derived from a moccasin type. Representations of footwear on ancient reliefs give no detailed

[1] W. W. Rockhill, "Notes on the Ethnology of Tibet," *Report of U. S. National Museum*, 1893, p. 686, pl. 2, fig. 4.

information about the pattern of footwear and can therefore not be used as evidence.

Unfortunately, the illustrations which artists of the middle ages have given us of the footwear used in Europe in their days, do not furnish very much more to the study of footwear patterns, than do the Assyrian reliefs. This is all the more regrettable because the shoes and boots of the European middle ages often show an outward likeness to moccasins. H. Ling Roth[1] and others have made remarks about this curious resemblance. But although we know a lot about the outer forms of the footwear of various ages, we know almost nothing about the patterns.

The old European sandal evidently is the prototype of certain low shoes which seem to consist of one piece of leather, laced on top of the foot.[2] But we do not know how far this development went; we are not able to make out whether the higher developed footwear types of the middle ages sprang from the same source; it seems not unlikely that these came into Europe from the near Orient.

The interesting *souliers à la poulaine* or *schnabelshuhe*, with prolonged pointed toes, which were used in France as early as the tenth century and constituted an important part of the costumes of the fourteenth and fifteenth centuries, were soft shoes, probably without soles, and therefore worn together with a sort of wooden sandal. A single pair of these remarkable shoes, from 1460, is kept in a museum in Colmar; but although illustrations have been published,[3] the pattern has not been described. We are therefore not in the position to judge how much these and other soft shoes used in the middle ages actually resembled moccasins.

I have already touched upon the question whether the Lapp moccasin may have been developed from the old European sandal. I have mentioned that the Scandinavian peasants as far north as

[1] H. Ling Roth, "Moccasins and Their Quill Work," *Journal of the Royal Anthropological Institute of Great Britain and Ireland*, vol. XXXVIII, London, 1908, p. 47.

[2] See A. Rosenberg, *Geschichte des Kostüms*, Berlin, 1907, pl. 136 (Europa, Kriegstrachten, Ende des XVI Jahrhunderts).

[3] Rosenberg, pl. 116 (Mittelalter, Schnabelschuhe).

northern Dalarne have until lately used the old sandal and the "house-shoe," a form developed from the sandal, perhaps in its instep piece showing the influence of the Lapp shoe, but still vastly inferior to this. This fact speaks strongly against the supposition that the Lapps borrowed their footwear types from the Scandinavians. To the same purport speaks the fact that the Lapp shoe never was used in Iceland, where, on the contrary, sandals of a type much like the one used in the Shetland Islands (see fig. 70) have been worn until the present day.

It must be admitted that the old European sandal of one piece of skin, bent up around the foot and laced, has developed a heel seam and a toe seam, even in some instances T-shaped, and given rise to a series of low shoes which conform to our definition of the term moccasin, set forth at the beginning of this paper. But we do not know how far this line of evolution went, because we do not know the patterns of the shoes of the middle ages. A better knowledge of these types might, or might not, disclose a likeness in pattern to the Lapp footwear; we know nothing on that point. Some weight should, however, be laid on the fact, that none of the footwear types, known from middle and western Europe show such remarkable likeness in *outer form* to the Lapp moccasin as does the Amur moccasin, fig. 59. This, in connection with the striking likeness in the patterns of these two types, taken together with the fact that at least some of the flat-soled boots used by the natives between Amur and Lapland must have been developed from a moccasin, gives support to the assumption that the Lapp moccasin and the Amur moccasin have sprung from the same source.

We reach here a question of some importance: have all the footwear types which conform to our definition of the term moccasin, been developed from one and the same prototype? I think not. In Europe, as we have seen, shoes with a sort of moccasin pattern have been developed from a primitive sandal and a parallel evolution has taken place independently in another corner of the world, in the southern part of South America. It has already been mentioned that an aboriginal sandal, not unlike the old European sandal, is found in the South American Andes

and among the Patagonians. The Ona Indians of Tierra del Fuego wear a shoe with a sort of moccasin pattern, evidently derived from this sandal. Fig. 86 (75002 Peabody Museum) represents the only specimen which has come to my notice. The

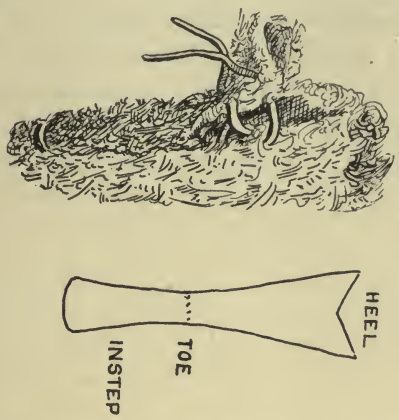


FIG. 86.—Shoe from Ona Indians, Tierra del Fuego. (Peabody Museum.)

material is a guanaco legskin. The upper and broader part of the legskin forms the bottom of the shoe, turned up around the sides, with a straight heel seam, sewn with a leather thong; the lower, narrower part of the legskin is bent up over the toe and covers the top of the foot, sewn to the bottom by means of a thong which in front passes across the toe, and the ends of which probably are tied across the instep. Evidently this thong is homologous with the lacing in the sandal.

This does, however, not imply that all shoes with moccasin pattern have been derived from a sandal. There is reason to believe that the North American moccasins, the north Asiatic and the Lapp moccasins, in other words, the bulk of moccasin forms, have sprung from a common prototype which was not a sandal.

I base this assumption mainly on the peculiar relation between moccasins and snowshoes.

Snowshoes cannot be used to full advantage without a pliable, stocking-like kind of footwear. Therefore the French Canadians

had to adopt the moccasin together with the snowshoe; the European footwear with hard soles would not do.[1]

The geographical distribution of snowshoes does not actually coincide with that of the moccasin group; but in the areas where the snowshoes have reached their highest perfection we also find highly developed moccasins, or, as in Siberia, "transformed moccasins," boots with a flat sole, of a stocking-like pliability; and on the other hand, the highest developed moccasin forms occur in the areas of highly developed snowshoes.[2]

The Eskimo tribes do not use moccasins and, as I have demonstrated, their boots cannot have been developed from moccasins. This probably has some connection with the fact that snowshoes

[1] Le Jeune writes 1634: "During the snows we all, French and savages, have made use of this kind of foot gear, in order to walk upon our Snowshoes; when the Winter had passed, we resumed our French shoes, and the Savages went barefooted." *Jesuit Relations* ed. by R. G. Thwaites, Cleveland, 1896–1901, vol. VII, p. 17. *Cf.* also vol. IX, p. 175, and vol. LXVII, p. 135.

[2] A comparative study of snowshoes would, if sufficiently detailed, be of great value and throw light upon the cultural history of the northern regions. I shall only point out a few leading facts.

Very primitive snowshoes are found in some of the mountainous regions of Europe, described from northern Spain (H. Gadow: *In Northern Spain*, London, 1897, p. 120) and from the Scandinavian peasants (Olai Magni: *Historien der Mitternachtigen Länder*, etc., Basel, 1567. Buch IV, cap. 12. Fridtjof Nansen: *Paa Ski over Grønland*, Kristiania, 1890, fig., p. 42 and p. 103). The Aino of Yezo use forms which are as primitive (Hitchcock, "The Ainos of Yeso," *Report of the U. S. National Museum*, 1890, pl. XCVII). Exceedingly primitive forms are also known from the Klamath and the Ute Indians and other Indian tribes of western U. S. (Mason, *Primitive Travel*, etc. See also *University of Pennsylvania Museum Journal*, vol. II, figs. 63 and 64). On the Chukchee peninsula and among the Eskimo of Alaska are used forms which are rather undeveloped, although not as primitive as the forms just mentioned. In northern Asia and Europe is found a highly developed group of snowshoes, the skis, distributed, from Amur to Lapland; and among the northern Indian tribes of North America another group is found, the netted snowshoes, which represent a high development in a different direction.

Two kinds of *trugor* are used by the Scandinavian peasants; one is made of two straight and parallel or slightly curved pieces of board, connected by three crossbars; this is the same type which Gadow describes from Spain. Another kind consists of an oval frame, made of a slender birch branch, with a very crude netting of twined birch twigs. This latter form bears some resemblance to the snowshoes of the Aino and of the Klamath and the Ute Indians, although these have rawhide for netting. It will thus be seen that while the higher developed snowshoes of the Old and the New World differ considerably, the primitive forms are more alike.

evidently do not belong to the oldest Eskimo culture. Snowshoes are not used by the Greenlandic Eskimo (except skis, which have been introduced in recent times). Most of the Cental Eskimo tribes apparently do not use snowshoes, although very primitive forms of snowshoes have been described from Cumberland Sound.[1] The Point Barrow Eskimo have in modern times introduced snowshoes of the pattern used by their Athapascan neighbors; until the middle of the nineteenth century they seldom used snowshoes and that only of an inferior sort, probably like those in use by most of the other Eskimo of Alaska and on St. Lawrence Island.[2] As the western Eskimo have borrowed highly developed snowshoe types in modern times, they may have borrowed the cruder snowshoes in earlier days; if snowshoes did belong to the original Eskimo culture, we should certainly expect to find them in Greenland. Very interesting is the information given by Murdoch, that the Point Barrow Eskimo when traveling on snowshoes use a heavy skin stocking instead of their outer boot; [3] Murdoch says that the thick fur, turned inside, acts as a wadding and keeps the feet from being galled by the bars and strings of the snowshoes. I would suggest that another reason comes into play, by the discarding of the outer boots: the stiff sandal-like sole of the Eskimo boot is impractical together with the snowshoe, while the soft and pliable stocking admits a better and safer strapping of the snowshoe to the foot.

Some significance may also be attached to the fact that the typical Plains Indians, who used soled footwear, did not travel on snowshoes. Even among the Blackfoot Indians snowshoes were not in general use except by some of the northernmost bands; Wissler says that in accounts of war parties he often heard it stated that the men waded in snow up to their waists.[4] James Mooney has

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[1] L. Kumlien: Contributions to the Natural History of Artic America, *Bulletin U. S. National Museum*, 15, Washington, 1879, p. 42. F. Boas: Eskimo of Baffin Land and Hudson Bay, *Bulletin American Museum of Natural History*, vol. xv, p. 40.

[2] Murdoch, "The Point Barrow Eskimo," *Ninth Annual Report of the Bureau of Ethnology*, pp. 351–352.

[3] Murdoch, *op. cit.*, p. 129.

[4] Clark Wissler, "Material culture of the Blackfoot Indians," *Anthropological Papers of the American Museum of Natural History*, vol. v, part 1, p. 97.

told me that the Indians of the Plains considered the winter to be a season unfit for traveling. Among the tribes using snowshoes it is just the opposite; they consider the winter as a favorable season for traveling.

Among the eastern Indians, snowshoes were probably used as far south as there would be any use for them. The Iroquois and the Algonkian tribes of northern New England traveled much on snowshoes. In Pennsylvania the Indians used them occasionally, according to the journal of a Moravian missionary, cited by Beauchamp.[1] The eastern Indians as we have seen used footwear of true moccasin pattern. The fact that moccasins are in use considerably farther to the south than snowshoes, even among the Seminoles of Florida, is of course sufficiently well explained by the absence of deep and long lasting winter snow and does not contradict our hypothesis: that moccasin and snowshoe do originally belong together.

A little more difficulty is caused by the primitive European snowshoes which are used without moccasins and must be considered very old in Europe; they are not, as the ski, borrowed by the Scandinavians from the Lapps—the Lapps probably never used *trugor*, and held them to be a very inferior means of travel, fit for peasants and not for Lapps. It may be that the lowest types of snowshoes came into existence before the moccasin-pattern was evolved; this would also fit in with the fact that the Aino of Yezo use a primitive kind of snowshoes together with a sort of primitive skin stockings which are not of moccasin pattern. (*Cf.* fig. 62.)

If such primitive footwear which is now used together with snowshoes on Yezo were the forerunner for the moccasin group, then *the oldest moccasin must also have been a sort of skin stocking* and the whole moccasin group must be considered as highly developed skin stockings. This, I think, is the most probable theory of the origin of the moccasin group, when we keep apart the European moccasin-like forms, outside of Lapland.

According to my theory then, the moccasin and the snowshoe

[1] W. M. Beauchamp, "Aboriginal Use of Wood in New York," *New York State Museum*, Bulletin 89, Archeology 11, Albany, 1905, p. 162.

have been evolved together, and this probably took place in about the following way:—

The oldest footwear undoubtedly is the sandal. In northern regions was adopted, together with the sandal, a wrapping of the foot, which by and by became a stocking. From the stocking in combination with sandal was evolved "sandal boots," the sandal becoming a boot sole; I have shown in my *Arktiske Skinddragter* that the Eskimo boots and some other forms should be reckoned among this group, and that the "sandal boot" probably was the oldest boot type in the north. In a region with much winter snow, probably in a mountainous country, the sandal underwent another transformation; in order to be able to walk through deep snow, some tribe evolved the custom of making very large sandals, and to insure sufficient stiffness and lightness these were made of wood or in the shape of hoops with a netting of twined twigs or rawhide. In this way the snowshoe was derived from the sandal. On top of the primitive snowshoe, which was itself a sandal, it would not be natural to use another sandal, but a stocking. As the snowshoe improved, this stocking improved also, and the moccasin group was the result. After a while, when the moccasin was fully established, it was used not only together with the snowshoe, but also as regular footwear, without any kind of sandal; and in that way it became even farther distributed than the snowshoe itself.

Our study of American moccasins led us to the conclusion that all true American moccasins have been evolved from a primitive form like fig. 10. The stocking from which our moccasin group was derived must accordingly have had a pattern much like fig. 10. It may be taken as a corroboration of our hypothesis, that skin stockings of this pattern actually are found.

Skin stockings, used inside the outer footwear, have a wide distribution. They are found everywhere in the arctic, outside of Lapland. Their pattern may often be called irregular patchwork, made up as they are of pieces left over from the tailoring of the visible parts of the clothing. In other cases the pattern is evidently borrowed from that of the outer boot. Probably we should not look for the oldest stocking pattern in any of these forms. More

interesting are the cases where the stocking has a pattern distinctly different from that of the outer boot. This we sometimes find in Eskimo and Chukchee footwear; we shall mention a few examples of stockings with a primitive moccasin pattern. Women's stockings from Coronation gulf, 60/6882 and 60/6883 A.M.N.H., are made of reindeer skin, the footing cut in one piece with a median toe seam and heel seam; in other words, the pattern of our moccasin series I. The same pattern is found in the footing of a man's stocking from Banks Island (60/6709 c, A.M.N.H.); the material of the footing is here young sealskin. In a model of a girl's dress

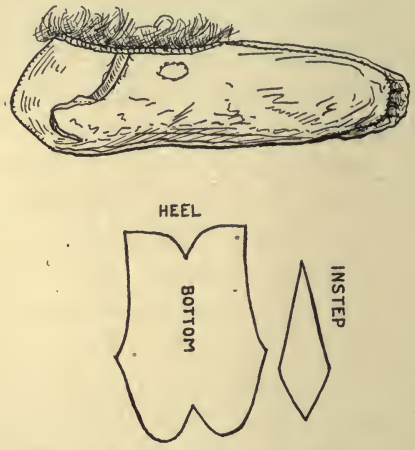

FIG. 87.—Stocking, Eskimo of St. Lawrence Island. (U. S. N. M.)

from the Eskimo of Anderson river (1689 U.S.N.M.), where trousers and stockings are combined, the same pattern is found in the footing. From St. Lawrence Island has come an interesting form, represented in fig. 87 (280138 U.S.N.M.), a short stocking, made of one piece of sealskin, hair inwards, with a straight median heel seam and a narrow gore of reindeer skin inserted in the toe seam. It is edged with dogskin. A strip of sealskin is used for tying the pair of stockings together, when they shall be hung up for drying.

An interesting stocking is also fig. 88 (280136 U.S.N.M.), from St. Lawrence Island, used in winter inside the boot, hairy side

inwards. It is made of reindeer legskin, one legskin forming the back of the stocking and the posterior part of the bottom. The pattern of this form has a certain likeness to the Lapp winter shoe,

FIG. 88.—Stocking, Eskimo of St. Lawrence Island. (U. S. N. M.)

fig. 65, which is made of the same material, reindeer legskins, and is a transformed moccasin. It will thus be seen that the influence of this material upon stocking and upon moccasin may produce similar results.

The stocking character of the moccasin is also evinced in a form like fig. 89 (50/3442, A.M.N.H.), from the Klamath river, California. It belongs to our moccasin series I, made of one piece of

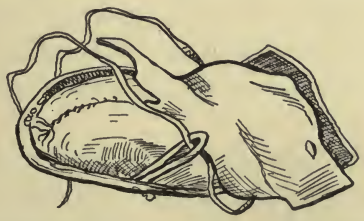

FIG. 89.—Moccasin from Klamath River. (A. M. N. H.)

buckskin, with a heel seam and a toe seam, a little unsymmetrical, after the shape of the foot. This moccasin is strengthened by a heavy rawhide sole, sewn to the moccasin by means of a leather thong. The rim of the sole protrudes along the sides of the moccasin and is a little upturned; a loop is fastened in the sole near its border on one side, and through this loop and a hole in the back of the moccasin an ankle band is drawn. This sole has the character of a primitive sandal and the whole footgear may be regarded as a sandal and stocking combined, a parallel to the Vakhan boot described on another page and represented in fig. 85.

The material at hand has now, as I think, provided us with answers to the first two of the questions which were set forth at the beginning of this section. The moccasins of North America, northern Asia and Lapland were derived from a certain stocking pattern. The forces or circumstances that brought about the evolution were probably the use of this stocking together with the snowshoe. The most difficult question yet remains: *where* did the evolution of the first moccasin take place? Has the moccasin been developed independently in different localities, or has it only originated once, and since spread from its first place over the northern world?

The answering of these questions is beset with grave difficulties. They are, of course, bound up with the question about the place or places of origin of the snowshoe. They cannot be answered fully without considering more material than is here presented. Nevertheless, I would like in conclusion to present an opinion upon this subject.

Some ethnologists like to imagine local and independent origins for cultural phenomena. Others have a natural dislike for independent origins and prefer to search for cultural centers and the ways and roads of cultural transmission. The present writer belongs to the latter class. This may, perhaps, to some extent be a matter of personal taste.

Cultural phenomena of striking similarity may develop independently in different areas. But when we find a certain cultural element distributed over a continuous area, we have the right and the obligation to search for a center of origin. It is and has always been much easier to borrow an idea from one's neighbors than to originate a new idea; and transmission of cultural elements, which in all ages has taken place in a great many different ways, is and has been one of the greatest promoters of cultural development.

As has been demonstrated in section III, the area of distribution of the moccasin group may be considered as continuous, because higher forms of footwear which have been developed from moccasins are found in the large gaps between the North American moccasins, the Amur moccasins, and the Lapland moccasins. Accordingly,

I am inclined to search for one common origin for all these moccasins.

I think it would be a grave error to look for the place of origin where the most primitive forms are now found. Such localities do not give any evidence of great cultural creative power and it is much more probable that they should be considered as places of refuge for cultural relics. This is confirmed by the fact that primitive forms are generally found near the border of the area of distribution.

Our analysis of the moccasin forms has shown that the primitive type has been changed in different directions, whereby a number of different types have come into existence. Evidently there have been many secondary centers of evolution for the moccasin group, where new varieties have been derived from old ones.

The strongest development of the moccasin has taken place in northern Asia, where we—apart from the Aino country—have found only highly developed moccasin types and "transformed moccasins." In other words, northern Asia has given evidence of a considerable activity of the forces which further the evolution of moccasins. Would it not be reasonable to suppose, therefore, that the very oldest moccasin forms originated somewhere in northern Asia?

My study of arctic clothing, the results of which have been published in my book *Arktiske Skinddragter* has strengthened the opinion that northern Asia has been the scene of a great development of clothing types. The material which I have analyzed shows that the majority of arctic clothing forms belong to the following six evolutionary groups:—

Clothing of the body.
1. Clothing developed from the poncho type.
2. Clothing developed from the loose mantle, originally a simple deerskin.

Clothing of genitalia and more or less of the body and legs.
3. Trousers developed from leggings, in some cases probably from leggings combined with a triangular genital cloth.
4. Trousers developed from breechcloth (*i. e.*, a piece of skin or cloth, drawn between the legs and fastened before and behind by a waistband).

Clothing of the feet and legs.
- 5. Boots and shoes developed from stocking and sandal ("sandal boots").
- 6. Moccasins, and boots developed from moccasins ("moccasin boots").

The geographical distribution of these groups is interesting. Groups 1, 3, and 5 have, all of them, two areas of distribution, one eastern and one western. The groups 2, 4, and 6 have continuous areas of distribution.[1] This has led me to the conclusion, that the groups 1, 3, and 5 belong together originally, forming a "complex," and probably have been developed together; I have called this complex A, because there is reason to believe that this was the oldest clothing in the arctic. The other three groups, 2, 4, and 6, form another complex, B, which probably originated later than A. The groups in complex B are not equally widely distributed, which is explained by the differences in their biological value; group 2, the kaftan forms, have the smallest area of distribution, which is in strict accordance with their inferior quality as protectors against the low temperatures of the northern regions. Group 6, the moccasins and moccasin boots, has the widest distribution, because of their relation to the important means of inland travel, the snowshoe, which according to my theory was developed together with the clothing complex B. All the groups of complex B are found unmixed with other forms in the Tungusian area only. Therefore, I presume that the origin of complex B should be sought for either in the actual area of the Tungusian tribes or a little to the south of that. The groups of the older complex, A, have evidently lost territory to the groups of the younger complex, and therefore it is hardly possible to throw much light on the question where the A-forms, the oldest arctic clothing, first came from.

If this theory be correct, we shall then have to reckon with two large cultural waves, which in prehistoric times swept over the northern regions. The oldest of these, now most fully represented

[1] An exemption should probably be made of group 4, as trousers derived from the breechcloth are found not only in northern Asia and Europe, from Bering Strait to northern Lapland, but also among the Thompson River Indians; this is, however, not very important, because at any rate primitive breechcloth forms are found between the two areas.

and highest developed in the culture of the Eskimo tribes, did not have snowshoes and therefore could not conquer the vast inland areas; it must have followed and taken into possession the rivers and coasts, and we would call this first great wave the *coast culture*. The younger culture wave is found fullest and most unmixed in the culture of the Tungusians, although its influence is felt from Lapland to Labrador; it still has the character of an *inland culture* and must have originated as such. Its most valuable possession is the snowshoe, which has carried it over the greater part of the arctic.

The differences between these two great cultural waves are not confined to clothing only. In the technique of skin-dressing, *e. g.*, we find a number of interesting points. The use of double-handled scrapers (originally a long bone) seems to belong to the inland culture, and also the smoking of the skin and perhaps even the use of fat as a tanning substance. As to habitations, the conical lodge must belong originally to the inland culture. The cradleboard or carrying-cradle and the birchbark canoe are also elements of the island culture. One of the most important elements of the inland culture is the hunting of reindeer and moose on snow by means of snowshoes; this method is found in use everywhere in northern Asia, Europe, and America where snowshoes of highly developed types are found; and it is not unlikely that it is the deer hunt which more than anything else has furthered the development of the snowshoe. Some elements of the arctic inland culture never reached America; the most important of these is the reindeer nomadism, which in itself contains some elements, due to influence from more southern forms of nomadism, and others which have their root in the methods of hunting wild reindeer. The fact that the ski never reached America and that the Old World has only quite primitive forms of the netted snowshoes, while America has highly developed forms, would indicate that the inland culture reached America at an early period. The great variety of forms of the snowshoes and moccasins, and also the diversity of local terms, bear further witness to the considerable age of the inland culture.

My theory of the arctic coast culture and inland culture is

founded on facts so important, that I think it will prove of some value as a working hypothesis. I therefore have ventured to set it forth in short outline at the end of this paper, although I cannot here present all the material which supports it.

For American ethnology one of the most important consequences of my theory would be, that most of the elements of the material culture of the Eskimo must have existed in America for a longer time than some of the most important elements of the material culture of the northern Indian tribes. The Eskimo culture represents the oldest arctic culture—this explains the curious combination of primitive elements and high development in the Eskimo culture. I think it would be well to employ a little more thorough analysis than some authors have indulged in, when finding prototypes for the cultural possessions of the Eskimo among the northern Indian tribes.

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BÁNARO SOCIETY
SOCIAL ORGANIZATION AND KINSHIP SYSTEM OF A TRIBE IN THE INTERIOR OF NEW GUINEA.[1]

By RICHARD THURNWALD

I. SOCIAL ORGANIZATION

Location

IN the following pages I shall endeavor to give an account of the social institutions of the Bánaro tribe in New Guinea which seems to provide the clue to several problems connected with primitive social organization.

The tribe concerned lives along the middle course of the Kerám, the lowest tributary of the Sepík or Kaiserin Augusta river in the northern part of New Guinea. During the dry season, when the current is not too strong, the trip up the Kerám, with its endless meanderings, to the region of the native settlements can be made by a good motor launch in three days, provided that no stops are made on the way. As the crow flies, the distance from the junction of the Kerám and the Sepík to the native settlements is certainly not less than fifty kilometers.

The first village encountered as one goes up the Kerám still belongs to the linguistic and cultural area of the lower Sepík tribes.

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[1] The present paper is based on material obtained in 1912–15 in New Guinea, as part of the work of an expedition to the region of the Kaiserin Augusta river, otherwise called the Sepík. The expedition was sustained jointly by the German Colonial Office and the Berlin Ethnographical Museum. The outbreak of the war brought the work to a sudden close, and forced me to leave New Guinea.

I take great pleasure in acknowledging my indebtedness to the Anthropological Department of the University of California for facilities offered me in my work. Prof. A. L. Kroeber, T. T. Waterman, J. A. Mason, E. W. Gifford, and also Prof. F. J. Teggart read the manuscript and I must express my gratitude to these gentlemen for several important remarks upon some pages of this article. I am much obliged to Miss Jennie Schwab, A.B., of the University of California, for the aid she gave me in expressing myself in English.

Due to unavoidable circumstances the author was unable to read the proofs of this article from page 290 to 390.—Ed.

The second village, Kambót, a rather large one, belongs to a different culture area. This area is subdivided into two districts; the one includes Tjámbio (Kambót) [Kámboa],[1] Engáleb (Iérambo) [Gorogopá], and Kamén [Kumbrágumbra]; the other, the following tribes met with in traveling up the Kerám: Búegendum [Kauguiánum], Rámunga and Búnaram, and finally Bánaro. The culture of this area is distinguished by the possession of bow and arrow, whereas the adjoining tribes of the lower Sepík use the dart, *Wurfpfeil.* The people of this region also practise the art of pottery, unknown on the lower Sepík. As the pottery of the lower Sepík is imported from the Kerám, this river is commonly known in New Guinea as "Potters' river," or *Toepferfluss.* Feuds are constantly in progress among the different tribes, including, of course, the Bánaro.

Tribal Name, Village Name and Social Groups

Each of the villages has a name of its own. Different localities, such as parts of the forest, of the grassland, big trees, creeks, hunting grounds, fishing pools, sago swamps, etc., are provided with special designations or proper names. These appellations are used as village-names. However, the name of the settlement must be carefully distinguished from that of the tribe.[2] The tribe-name is the designation given to a tribe by its neighbors.

The difference between village-name and tribe-name is especially marked in cases where we can observe the migration of a tribe that occupies but a single village. This may perhaps be made more

[1] The names given are in the Bánaro idiom. Parentheses (—) refer to the name in the Kambót dialect, brackets [—] to the Tjímundo and lower Sepík language. The phonetic transcription used in this paper is:

n as in English *sing;* in phonetic alphabet *ŋ*.

a as in New England *half;* in phonetic alphabet *ɒ*.

e as in *that;* in phonetic alphabet *ä*.

o as in *all;* in phonetic alphabet *ω*.

e in *úe*, as in *the* in rapid speech; indeterminate vowel; in phonetic alphabet *ə*.

The macron over a vowel indicates length; the raised period of the phonetic alphabet. The acute accent indicates stress; the grave accent indicates secondary stress.

[2] A similar observation has been reported in reference to the Kuni tribe in South New Guinea, by P. V. M. Egidi, "Casa e villaggio, sottotribú e tribú dei Kuni," *Anthropos*, vol. 4, 1909, p. 395.

clear by the example of the Tjímundo tribe, inhabiting the first settlement met with on the Kerám, which has changed its dwelling place several times in the last twenty years. This tribe, consisting of one village, is called Tjímundo by the surrounding tribes, but the village the tribe inhabits at present is called from its location Bobónarum. It removed to this place about four years ago from Orómanum, where many deaths occurred, resulting probably from unhealthy conditions. The stay of these people at Orómanum was very short, lasting only for two or three years. They had there built up a new village on coming from Máienum, a place that they left because of attacks by their old enemies, the Móagem people. On account of these attacks they had already changed their former dwelling place on the mouth of the Kerám, called Yánumbui. Prior to that they had inhabited Amēbonum (Parám, today the Mission station Marienberg) on the left bank of the Sepík river. They quit this location on account of hostilities with their neighbors in the hinterland. The tribe-name, however, remained Tjímundo.

Settlement of the Bánaro

To return to the Bánaro people. Their settlement consists of four separate villages, two on either side of the Kerám. Each of its villages is composed of from three to six hamlets, each hamlet in turn consisting of from three to eight houses. Every hamlet boasts of a special communal structure, as a religious center called *bűek*, but there is no such common "goblin-hall" for the village as a whole.

A word is needed here to explain why I use the term "goblin" instead of "spirit." The kind of beings the natives suppose influence their destiny are more material than spiritual. As they are imagined to be rather concrete and generally mischievous, the word "goblin" might be in place here, corresponding to the German *kobold*, which I prefer to apply in this connection.

The social unit of the settlement is the hamlet. (See diagram, fig. 90.) The hamlet, together with its inhabitants, derives its name from that of the goblin-hall; the name of the goblin-hall, as well as the

name of the tribe, remains constant. If the location of the hall should be changed on account of the migration of the tribe, or if a new hall should be built in the same village, the name would still be retained. So, in the example of the above-mentioned Tjímundo tribe the names of the two goblin-halls, which with their surrounding houses constitute the village, have always been the same,—Yuórmua and Nangúndumbir. Not only have the names of the goblin-halls been retained, but also their position in

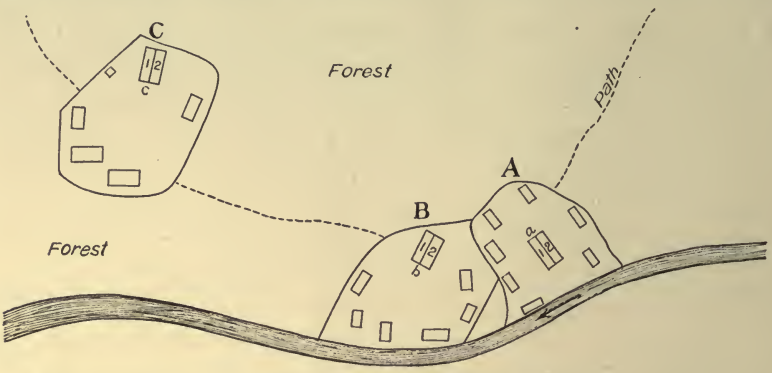

FIG. 90.—A, B, C, clearings with hamlets inhabited by a gens. A × B × C, a tribe. A + B + C, a village. a, b, c, goblin-halls. 1, 2, the two sides of a goblin-hall, each for a sib.

relation to the river in the different localities the tribe has occupied, the first being always farther downstream than the other. Yuórmua, the natives say, "goes first," and Nangúndumbir "follows," the whole village being imagined as floating down the river. Thus, the designation of the hall is in no way connected with the locality, but with the group of people belonging to the goblin-hall. I propose to call such a group a "gens." Thus there are as many "gentes" as hamlets.

As one enters a goblin-hall, he is immediately impressed by its symmetrical plan. This is especially noticeable in the arrangement of the fireplaces, of which there are four, two on each side of the hall, directly opposite each other. In the dwelling houses of the upper Sepík region there is the same symmetrical arrangement of fireplaces, of which there are from six to eight, each being

assigned to a separate family. These latter houses, however, are not goblin-halls, but communal dwelling places of an entire tribe. Such a house is built on piles, six to fifteen meters high. It is the only one in the clearing, and always of great size, giving shelter to from thirty to sixty people.[1]

It may well be imagined that the goblin-hall of the Kerám region has been derived from this type of house. As the community grew, the families, it would appear, built their houses around the hall, which came to be used only for the ceremonies performed by the men. All Kerám houses are like the goblin-halls built on piles, but the dwelling houses are much smaller.

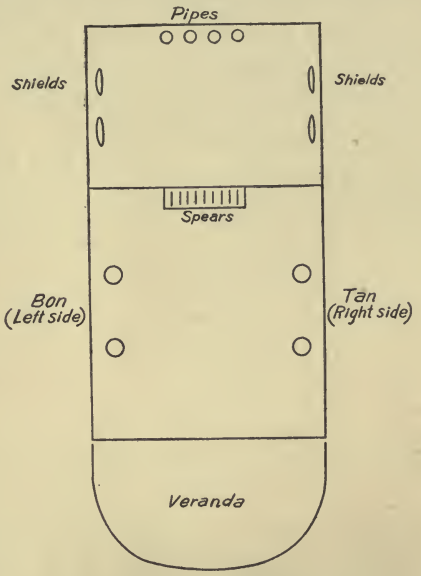

FIG. 91.—The goblin-hall, *būék*.

The two symmetrical rows of fireplaces in the goblin-hall (see diagram, fig. 91) correspond to a division of the gens into two halves. It might perhaps be allowed to use the word "sib" in a narrower sense to indicate these halves. The sibs themselves have no special names, other than "the left," *bon*, and "the right," *tan*, drawn from their place in the goblin-hall. These terms refer to their relative positions as one faces the entry. The term for the left side, *a bòn areán* is derived from the name for bamboo pipes, *bon-moróm*, meaning literally "bamboo-goblin." The designation for the right side, *tan*, probably has some connection with the big wooden

[1] Big houses with features like the village houses of the upper Sepík are also reported from "high up the Fly-river" by D'Albertis, *New Guinea*, 1881, compare Haddon, "The Houses of New Guinea," in *Festskrift tillegnad E. Westermarck*, 1912, p. 26 and 57. Similar communal houses with a fireplace for each family are found among the Orang-Temīa and Belendas on the Peninsula of Malacca; *Globus*, 1902, vol. 82, no. 16, p. 257.

drums. Although the word for drum is not involved, the appellation for iron-wood, out of which the drums are cut, is *tan*.

The external form of the settlement reflects precisely the internal organization of the tribe; for the goblin-hall, with adjacent houses in the same clearing, mirrors the social unit, the gens, just as the symmetric partition of the goblin-hall into two parts, the division of the gens into halves.

The symmetry in the arrangement of the goblin-hall is the expression in space-terms of the principle of social reciprocity or the "retaliation of like for like."[1] This seems to be the result of what is psychologically known as the "adequate reaction," which is deeply rooted in man.

The principle of retaliation of like for like is known to us from remotest antiquity,—from the Old Testament, as well as from the oldest of law sources, the codes of the Babylonian kings. Now, this principle applies, not only to cases of revenge for injuries inflicted, but also to other manifestations of social life. In fact, it pervades the thought of primitive peoples, and often finds its expression in their social organization.

In the instance of the Bánaro tribe, we meet with a concrete illustration of this principle in their marriage institutions.

Exchange System

In the South Seas in general, two forms of arranging marriage prevail: (1) the exchange of woman for woman; (2) the buying of women with objects of value.

Mutual exchange of women probably originated as a pledge of good will in the establishment of friendly relations between two communities. This form seems to me the original one from which the second form has been derived. In cases where mutual exchange became impossible, return was made by objects of value.

Among the Bánaro we find the exchange system in full operation, elaborately worked out in every detail. When a girl has

[1] I may here cite A. M. Hocart, who remarks the considerable degree of symmetry of the social organization in Nodho, Rewa delta, Fiji. *Journal Royal Anthropological Institute*, 1913, p. 113.

reached the age of puberty and gone through the initiation ceremonies, she consults with her mother as to which of the marriageable youths suits her best. Of course, she often has an understanding with the boy beforehand. She may choose from among the boys of the several gentes of which her tribe is composed. Marriage within the gens is not permitted. It is only in exceptional cases that marriage into another tribe takes place, as an examination of native pedigrees proves. For this reason we may call the gens exogamic, the tribe endogamic.

The girl's mother discusses the matter with her husband, and if they agree, she prepares a pot of boiled sago, which they then carry in a basket to the parents of the chosen bridegroom. The families concerned confer with each other and come to a formal agreement. As compensation for the girl the sister of the bridegroom must be married to the bride's brother. But the sago is offered under the pretext of asking the bridegroom's sister in marriage for the bride's brother. If the other parents accept the sago, the case is settled, as far as the two sets of parents are concerned.

But the situation is now complicated further. We noticed above that each gens is divided into two sibs. These two sibs are united by a bond of friendship for mutual protection and pleasure, as well as for purposes of revenge against outsiders.[1] The two sibs are considered to be the best of friends. They "can never fight" against each other. It seems required, therefore by a kind of active sympathy, that if one sib is going to celebrate a marriage, the other sib shall also have an opportunity for a feast. Moreover the principle of requital implies that the other sib shall participate, as we shall see later on. Accordingly a bridegroom of the right side (*tan*) of the sib must take his bride from the same side of the other gens; a bridegroom of the left side (*bon*) takes his bride from a left sib.

After the parties have mutually agreed, each pair of parents confers with the paternal grandfather of each bridegroom. Each

[1] Seligmann, *Man*, 3, 1909, reports a similar institution from the Wagaga, Milne bay district, South New Guinea.

grandfather consults with his *mundū*, his special friend in the corresponding sib. If the grandfather is dead, his brother takes his place.

The *mundūs* of the grandfathers now confer with their sons, and the sons with their children, in order to arrange for two corresponding marriages further in the parallel sib. Thus we may count four pairs to be united by marriage. (See diagram, fig. 92.)

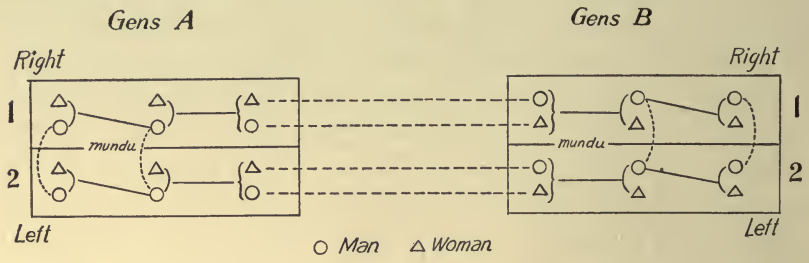

FIG. 92.

Two gentes each exchange one girl for a girl of the other gens, and this pair of girls is doubled by the parallel exchange in the corresponding sib of each gens.

This is the ideal system, but in reality it cannot always be carried out to its fullest extent. Defective cases will be dealt with later.

GIRLS' INITIATION

The marriage ceremony, as was mentioned above, is connected with the initiation ceremony of the girls. Girls are provided with husbands on reaching the age of puberty. It would lead us too far to give a detailed account of the rather complicated festivities here. The following however are some of their principal features.

Wild pigs are hunted, and domestic pigs slaughtered on different occasions, once by the fathers of the girls, once by their mothers'-brothers. During a lapse of all together nine months, the girls are confined to a cell in the family house, getting sago soup instead of water throughout that time. For the whole period their fathers are obliged to sleep in the goblin-house. At last their cell is broken up by the women, the girls released and allowed to leave the house.

The women get cocoanuts laid ready beforehand, and throw them at the girls, whom they finally push into the water, again pelting them with cocoanuts. The girls crawl out of the water on to the bank, receive portions of sago and pork, and are now dressed, and adorned with earrings, nose-sticks, necklaces, bracelets, and aromatic herbs. After this a dance of the women takes place.

That same evening the orgies begin. When dusk breaks in, the men assemble on the streets of the village. The old men consult with each other, agreeing to distribute the girls according to their custom. This custom was explained to me in the following way. The father of the chosen bridegroom really ought to take possession of the girl, but he is "ashamed" and asks his sib friend, his *mundū*, to initiate her into the mysteries of married life in his place. This man agrees to do so. The mother of the girl hands her over to the bridegroom's father, telling her that he will lead her to meet the goblin.

The bridegroom's father takes her to the goblin-hall and bids her enter. His *mundū* has already gone into the goblin-hall, and awaits her within. When she comes in, he, in the rôle of the goblin, takes her by the hand and leads her to the place where the big bamboo pipes (three to six meters long) are hidden.

These musical pipes, by the way, play a most important part in many ceremonies, and their voice is supposed to be that of the goblin himself. Sight of them is forbidden to women, on pain of death.

Before these hidden gods the couple unite. Afterwards the girl is led out of the goblin-hall, where her bridegroom's father awaits her and brings her back to her mother. The *mundū* returns home in a roundabout way, for he is "ashamed" to meet anybody on his way back.

The bridegroom's father goes back to the goblin-hall, and it is now his turn to perform the rôle of goblin, his *mundū* bringing him his son's bride.

After that, the same rite is performed with the other two girls.

The bridegrooms and the other boys, in the meantime, are confined in a house, set apart for this purpose, and watched by their mothers' brothers.

The fathers in their capacity of goblins are allowed to have intercourse with the brides on several subsequent occasions, but only in the goblin-hall.

The bridegroom is not allowed to touch her until she gives birth to a child. This child is called the goblin's child. When the goblin-child is born, the mother says, "Where is thy father? Who had to do with me?" The bridegroom responds, "I am not his father; he is a goblin-child;" and she replies, "I did not see that I had intercourse with a goblin."

After the birth of the child, the bridegroom is expected to have finished building a new house, and the bride, the plaiting of the big sleeping bag, used on the banks of the Kerám river, as well as on the Sepík river, as a shelter from mosquitos. Then the couple are finally permitted to begin married life, without any further ceremonies, in the new house. On solemn occasions the goblin-father continues to exercise his "spiritual" function in the goblin-hall.

The avoidance between bride and bridegroom must be classed with a widely-spread custom appearing in the different forms of the so-called "Tobias nights,"[1] and not unknown elsewhere in New Guinea, as, for instance, among the Massim people,[2] and the Mekeo tribe.[3]

[1] It is indeed possible that the avoidance of the bridegroom for a certain time might have evolved from the custom of the initiation of the bride by some of the gerontes of the tribe. This seems to be the more probable because with some people premarital intercourse between the bride and the bridegroom is conceded. But immediately after marriage a rigorous avoidance is practised for a certain time by the newly married couple. The bride is very often led to the house of her father-in-law the first days, weeks, or months after the nuptial ceremonies, being guarded by her father-in-law or some of his relatives during the period of avoidance. *Cf.* F. F. v. Reitzenstein, *Zeitschrift für Ethnologie*, 1909, pp. 656, 677, 678.

We find even, that marriage is sometimes arranged only after a child has been born, as for instance among the Tai-Shan tribes in China. Strzoda, "Die Li auf Hainan," *Zeitschrift für Ethnologie*, 1911, p. 203. Often a marriage is regarded as not complete until a child is born. E. Crawley, *The Mystic Rose*, p. 464.

[2] *Cf.* C. G. Seligmann, *The Melanesians of British New Guinea*, 1910, p. 745.

[3] It is customary with this tribe to bring the bride to the house of the bridegroom's father, where she sometimes lives for two or three months before cohabitation with her future husband takes place. The signal is given, by her presence in the garden, that the marriage may be consummated. R. W. Williamson, *Journal Royal Anthropological Institute*, 1913, p. 276.

When the first child, say a boy, comes to the age of puberty, and becomes a *guli*, as a child of about twelve years is called, he goes through initiation ceremonies which are somewhat similar to those of the girls described above.

Boys' Initiation

These ceremonies are also connected with the *mundū* institution. Boys of the two sibs are initiated together. First, their fathers consult with each other. The grandfathers, who acted reciprocally as goblin-fathers of the firstborn, confer with the brothers of the respective mothers, in order to plan for a hunt of wild pigs in the forest. The two goblin-fathers go in one party, the two mothers' brothers in another. After the hunt, the two parties meet outside the village, and now the respective fathers and uncles of the boys return home together with the pigs. The goblin-father cuts the pig into two halves, giving one side to the adopted father of the goblin-child, and retaining the other for himself. The mothers boil the pork and prepare sago. The next morning the men bring the head of the pig to the goblin-hall, and deposit it before the bamboo pipes. Later on, the two mothers' brothers and the two legal fathers eat the head of the pig. The other women of the village bring baked sago to the goblin-hall, where the men are assembled. After sunset a *mundū*-festival takes place.

At this time the goblin-father ceases to exercise his right as representative of the goblin, ceding his power to his son, a man of the same age as the initiated woman's husband. The goblin-father, however, is formally invited, but he scratches his head and refuses. He might, for example, say "No, I am too old now; my son had better take over the *mundū*-rights." These rights are, as a matter of fact, usually inherited.

From this time forth the husband's sib-friend, his *mundū*, acts as goblin on festive occasions. (See diagram fig. 93.)

The initiation ceremony coincides in time with the refusal of the goblin-father to continue in his goblin rights towards his sib-friend's daughter-in-law. This indicates that the goblin-father is entering into another age-class, paralleled by the permission of

his son to enter into the full privileges of sex life, and by the arrival of his own goblin-child at the age of puberty. The latter stage is used as a means of grading the age-class.

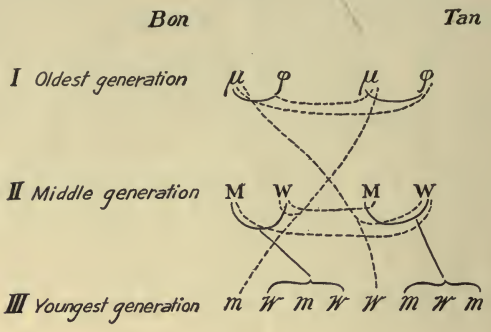

FIG. 93.

During these ceremonies in the goblin-hall, the boys are brought to another house, and there watched over by their mothers' brothers. When the father returns, he brings a burning brand from the goblin-hall with him, goes to his son and describes a circle of fire around the head of his boy.

The fathers and the mothers' brothers now pick up the boys and carry them on their shoulders to the goblin-hall. Here they wait outside on the veranda until all the men have entered. The men form a line across the hall and begin to dance. The other men blow the pipes from behind the row of dancers. The boys are now brought inside the hall. At this, the pipers break through the line of rhythmically dancing men, and press the pipes upon the navels of the boys.

After further ceremonies, the boys are placed upon a piece of sago bark, and the fathers and mothers' brothers now take the bamboo pipes and blow upon them. Then they hand over the instruments to the boys and show them how to play them. After this, the boys continually practise playing the pipes.

Thereupon the boys are confined in cage-like cells (*momúnevem*), built for that purpose in the goblin-hall. The goblin-hall itself is surrounded during that time with a fence of sago leaves.

A good many other ceremonies are performed during the period the boys are interned, for instance a ceremony connected with the bullroarer. They also insert in the urinary passage two or three stems of *Coix lacrima*, a barbed grass. These stems they pull out suddenly, so that the walls of the passage are cut.[1] After three months of confinement the initiates are "shown" the phenomena of the world that surrounds them,—animals, plants, high water, thunder and lightning,—which are presented as spirits in the shape of wooden idols. They are also introduced to the goblins of this world and the spirits of their ancestors.

Five months later, during new moon, the father and the mother's brother slaughter domestic pigs, as is usual at the conclusion of ceremonies. The mother now roasts the pork and cooks sago. The other women of the gens also prepare sago. The men of the related gentes bring taro, yams, bananas, sugar cane, tobacco, betel nut, and betel pepper. Then they sing and dance, day and night.

Finally the boys are girded, clothed in a kind of fringed sago leaf skirt, belted with hoops of rattan, and adorned with plaited bracelets, nose sticks, and ear ropes. Their waists are tightly bound with a wide band of rattan wickerwork, drawn so firmly together that they can hardly eat. It is the pride of the boys to have a slender waist.

Their father then offers them betel nut and betel pepper, and washes them in the water left from the filtration of the sago. The mothers' brothers shave their temples and the back of their heads, leaving a kind of crest.

The fathers in the meantime have carved small human figures (*bukámorom*, on the lower Sepík called *kandímboan*) as a gift of mutual friendship between the intermarrying gentes. With these figures a particular charm is performed. The father goes with the boy into the forest to search for a water liana, a particular species containing water in its stem. This liana is cut and the water allowed to flow over the figure, betel nut and betel pepper

[1] *Cf.* the Australian customs reported by N. W. Thomas *Zeitschrift für Ethnologie*, 1905, p. 762. W. E. Roth, *Ethnological Studies in N. W. Queensland*, 1897, p. 179.

are laid upon it, and it is then wrapped up in bark. The figure is used as a love charm. If the boy should go into the bush with this, he would expect to meet a woman. When the women hear that such a charm has been executed, one of them, ordinarily the wife of the mother's goblin-initiator, *i. e.*, the wife of his grandfather's sib friend, complies with the wish expressed in the charm. This is the boy's initiation into sexual life.

At sunset the fathers and mother's brothers carry the boys with the pipes to the banks of the river, where they line up along the shore, the boys still on their shoulders. The other men stand in a line behind them, dancing and singing. The goblin-fathers, stationed at the two ends of the line, hold a rattan rope in their hands, with which they finally force the boys into the water, so that they may have a bath with the pipes. Afterwards the boys return to the goblin-hall. Meanwhile the women are sent to the forest, lest they should get a glimpse of the pipes.

The next morning another bathing ceremony takes place among the adults of the community. First the men, singing and dancing, form a line along the bank of the river; the women line up behind them. The mothers of the boys who are being initiated make a fire by rubbing a cord of rattan on fire wood. The women begin to dance, the mothers drawing taut a long rope of rattan behind the men, by means of which they finally push them into the water. After this the women throw at the men cocoanuts previously laid ready. The men, in return, shoot back with bow and arrow, each man trying to hit his *mundū's* wife. The men now climb out of the water, and the reverse of the above ceremony takes place, the men pushing the women into the water with the rattan rope. This time the women shoot back from the water with arrows, aiming at their goblins.

While the bathing ceremony is going on, the boys are kept apart and watched over by their mothers' brothers.

On the same evening the festival in the goblin-hall is repeated, but this time is extended to the mothers' brothers and their *mundūs*. The latter also meet in the goblin-hall of the initiated boys.

After this the boys are brought home to their mothers. Here

their hands are extended over a fire, and the joints of their fingers cracked over the flame.

These ceremonies conclude the festivities, and the boy is finally allowed to associate with women.

The initiation ceremonies, as we have seen, introduce the marriage rites and are intimately connected with them.

I should like to call attention to the fact that marriage ceremonies are not differentiated from the ceremonies associated with puberty. The maturing of sex is ritually identified with the functioning of sex, and the possibility of the function with its practical employment.[1] This employment, however, is restricted to a definite group of persons and to certain fixed occasions, in the manner shown above.

Further Ritual Exchange

The ceremonial exchange of wives is not limited to initiations alone. It is practised in connection with other important rites as well. It forms part, for instance, of the rather complicated funeral rites, which cannot be discussed here at length. After the burning of a corpse, say the deceased M_{A2} (see diagram, fig. 94), the pot with the ashes is deposited in the goblin-hall, before the bamboo pipes, for a period of two months. It is then fetched back to the house of the deceased. That same night intercourse takes place between the dead man's brother, $M_{A2/b}$, and the wife of the widow's brother's sib-friend, $W_{(A1\rightarrow)B1}$, or the wife of his sister's husband's sib-friend; that is, he takes the wife of the *mundū* in the corresponding sib in the gens from which the deceased's wife originated.

After this ritual union, the eyes of a bark image representing the dead man's face are wiped with leaves, and from this time on the dead is supposed to see.[2]

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[1] P. V. M. Egidi affirms the same from his experience with the Kuni tribe, *Anthropos*, 1909, p. 403. The initiation ceremony also coincides with the marriage ceremony elsewhere as for example among the Orang-Temia on the Malacca peninsula, *Globus*, 1902, vol. 82, no. 16, p. 253–7. A similar usage is even reported from among the Estians in Russia, as mentioned by F. F. v. Reitzenstein, *Zeitschrift für Ethnologie*, 1909, p. 676.

[2] Parallel to this is the Maori belief that a foetus gets its soul when the eyes assume form. Elsdon Best, *Journal Royal Anthropological Institute*, 1914, p. 32.

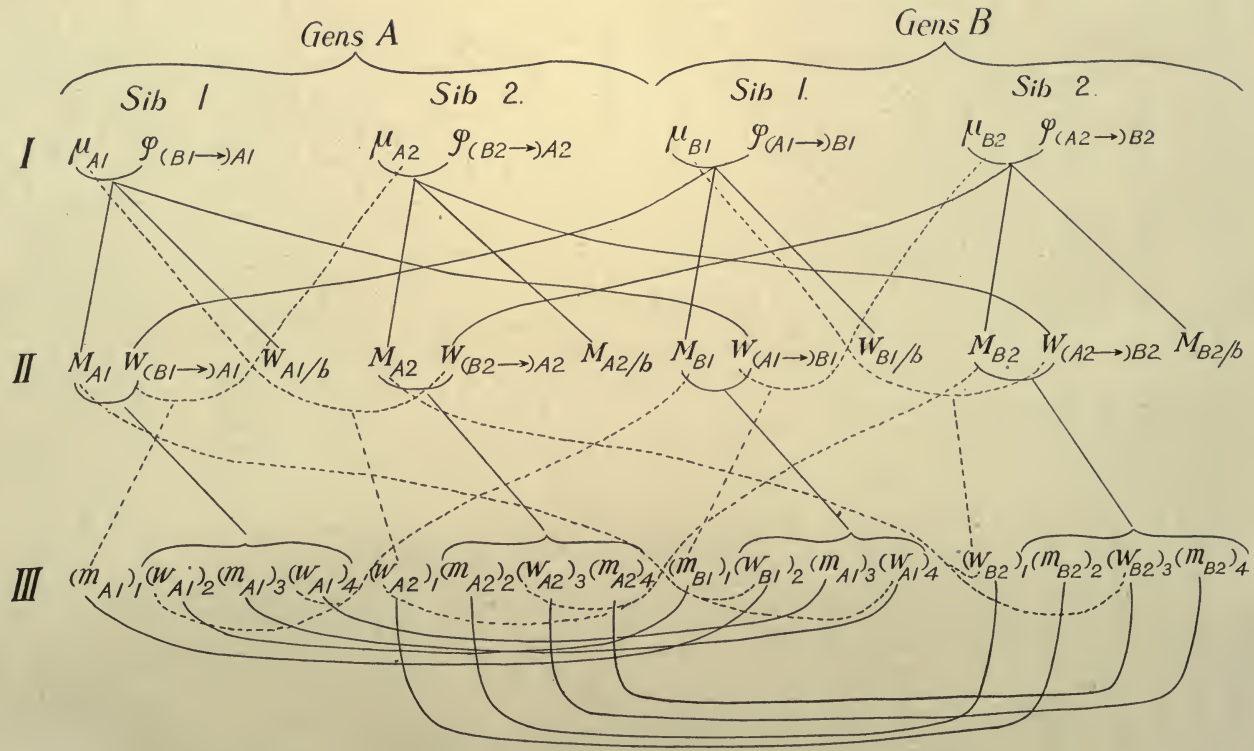

FIG. 94.

At the end of this period, and after various rites and ceremonies have been performed, the pot with the ashes is buried, and on the same night the deceased's sib-friend's son, $(m_{A1})_1$, exercises marital rights over the widow $W_{(B2\rightarrow)A2}$ in the deceased man's house. He is to take charge of her hereafter. During this performance the men go into the forest and play on the bamboo pipes.

The next evening the deceased's brother, $M_{A2/b}$, enters into his deceased brother's right and exchanges wives with his deceased brother's sib-friend, M_{A1}. Only this ceremony takes place in the goblin-hall.

The exchange of women also forms an integral part of the dedication of a new goblin-hall. Whenever such a hall is built, a complicated ceremony takes place, with the fluting of bamboo pipes and blowing of triton horns. The festivities in this case are

FIG. 94.—This table is intended to give a brief survey of the various kinds of relations resulting from the social organization and the marriage customs. For this purpose certain signs are uscd.

The scheme may be easily grasped. The first generation is indicated by Greek letters, the second by capitals, the third by lower case letters.

The males are designated by μ, M and m, females by ϕ, W and w.

The first sib of each gens is marked by 1, the second by 2. One gens is called the A gens, the other the B gens.

With the third generation, indicated by lower case letters, the sex designation together with the sib and gens distinction are set in parentheses, and the sequence of the children is shown by the numbers 1, 2, 3, 4. Thus 1 means the eldest, 4 the youngest child; (m_{A1}), designates the first born male child of the first sib of the A gens, $(w_{B2})_3$ the third female child of the sccond sib of the B gens.

That their descent may be understood, the married women are indicated in the following way. The gens and sib of their origin are put in brackets, the arrow indicating into what gens and sib they married. For instance, $W_{(B1\rightarrow)A1}$ means that this woman was born in the gens B, sib 1, and that she married into the gens A, sib 1.

In the scheme given only two gentes are taken into account for the sake of simplifying the diagram. Mingling with other gentes in addition is considered in the diagram in figure 96.

Brothers and sisters outside of the marriage system of the scheme are indicated by adding a b to the given brother's or sister's designation, such $M_{A1/b}$ for the brother of M_{A1} or $W_{A2/b}$ for the sister of M_{A2}. For the sake of clearness the signs for sib and gens are omitted if the case is of a general nature, as in all relations within one and the same sib. The signs for gens are omitted in cases of inter-phratry relations.

Σ means the sum of all persons concerned, for instance. Σm_1 means all the men of the first sib.

again concluded with the exchange of the women of both sibs among the *mundūs*. On this occasion four pigs are slaughtered, two for each (longitudinal) half of the hall.

The System at Work

If we try to sum up the system that results from these various customs, we come to the following conclusions:

Each woman, as time goes on, has regular intercourse with three men: (1) With the sib-friend of her bridegroom's father; (2) with her husband; (3) with her husband's sib-friend. And each man also has legal intercourse with three women: (1) With his wife; (2) with his sib-friend's wife; (3) with the bride of his sib-friend's son. This holds true if we leave out of consideration the old woman who initiates the boy. (Compare diagram, fig. 93.)

There is no doubt that this results in greater probability of conception, and that sterile marriages are prevented in a higher degree. But I doubt whether this eugenic reason had any influence in establishing these customs. However, in case a marriage should prove to be sterile, the man is allowed to take another wife; but then there are no ceremonies.

It must be borne in mind that if a child's extramarital father is its mother's sib-friend, this man is the son of its mother's goblin initiator. Thus the three men of the other sib with whom the woman has to deal, besides her husband, are a father and his son, and eventually this latter person's grandson. A man, however, has to do first with a woman of his grandmother's generation, hereafter with his female sib-friend of his wife's age-class, later with this woman's son's wife. A woman has intercourse with males who are lineal descendants, a man with females who are not direct offsprings in successive generations. A male will have union—besides his initiation—with two persons of his age-class and one of the following one, a female with one of the preceding age-class and two of her own, and eventually with her grandchildren's generation. It will be noticed that intercourse is avoided on the female side with the son's generation and correspondingly on the male side with the mother's age-class.

The offspring of the union with the goblin is called the "goblin's child," *mòro-me-m´an*. Although the child remains with the mother, we cannot speak of a female line of descent, for the child is adopted by his mother's husband, who cares for his further education, and practically acts as his foster father.

That the first child is known as the "goblin's child," might be associated with a religious usage which we find widely spread in some form or other in the custom of offering the first-born, the firstling, or first fruits, to the gods.[1]

The psychological association of the "first" with the first cause and whatever is felt superior to man, is, of course, striking and suggestive, and explains the wide distribution of this custom.

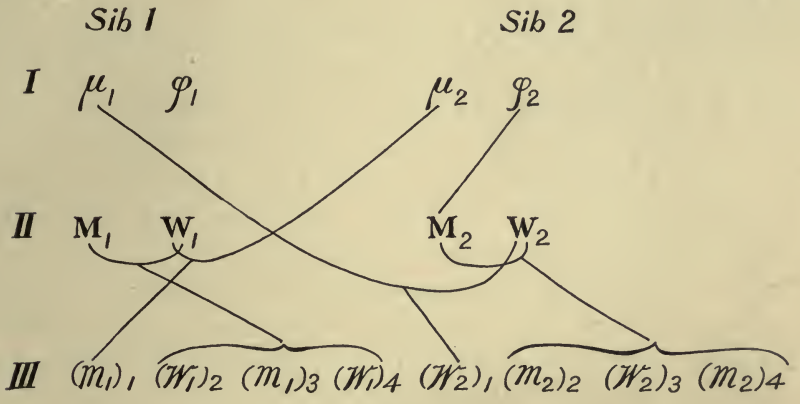

FIG. 95.

An ascendant's,—μ_1's—intercourse, as far as the next generation is concerned, will be restricted to the future wife W_2 of his *mundū's* son, M_2 who, of course, takes his wife from another gens. (See diagrams, figs. 94, 95.) It must be remembered that there is no intercourse between the ascendants of one sib M_1 and the descendants of the other sib $(w_2)_1$ or $(w_2)_3$, for these girls must be married into another gens, where they will find their goblin initiator,

[1] On the other hand, it is generally accepted by primitive thinkers that a child must be produced by the spirits of its ancestors. *Cf.* Reitzenstein, *Zeitschrift für Ethnologie*, 1909, p. 679.

husband, and husband's sib-friend. A man M_1 has no right of intercourse with his *mundū's* stepdaughter $(w_2)_1$, who, if she happened to be his goblin-child, would be his father's μ_1 daughter and so his half-sister. Nor may he have intercourse with his *mundū's* M_2 daughter $(w_2)_3$, for she could be his own daughter.

Whether the husband happens to be the children's father or not, is of no importance in this scheme; he is the foster father of his wife's goblin-child, and of any children his wife might have with his own *mundū*, as well. These children of his wife may, perhaps, originate entirely from fathers of the other sib of the gens. But the man is the head of his wife's family. The family relation and the sexual relation rest each upon a different basis, as has been shown above.

It will be seen that each of the four simultaneously intermarrying couples has a different pair of parents, if the first pair of mates is a pair of goblin-children. This first pair is paralleled by a second corresponding pair of goblin-children in the other sib. Each of the two pairs of goblin-children, as shown above, is " complemented " by another pair of ordinary children. The goblin-child and the corresponding ordinary child have each the same mother, but different fathers. The four pairs of intermarrying mates possess four mothers and eight fathers, each of the eight children belonging to another father.

Defective Cases

We shall now turn to consider the cases where, for some reason or other, the system cannot be carried out to its fullest extent.

As we have seen, the marriage of one couple is always balanced by the counter-marriage of another couple of the opposite sib. Thus, it is necessary that each girl should have a brother and each boy a sister.

Nature, however, does not dispose of the distribution of sexes to one couple in such a systematic way. Therefore, the natives attempt to improve upon nature by killing the children of the undesirable sex in the succession of births. Thus, if two boys or two girls are born in succession, the second one is generally killed.

A second wife is taken, if the marriage with the first wife remains without issue, or if later the first wife does not give birth to a further child, if such is wanted to fill up the required even number of children.

Nevertheless, the standard of equal numbers in the distribution of the sexes cannot be maintained, because of possible deaths occurring in infancy or childhood. It may always happen that out of the four couples one person may be wanting. In such case the gaps may be filled by the substitution of cousins for brothers or sisters.

If conditions for a complete *mundū* marriage cannot be fulfilled a simple exchange marriage of two couples of corresponding gentes is arranged. On such an occasion the *mundū* is freely chosen from members of the opposite sib.

Where two sisters are to be exchanged for two sisters of another gens, and the elder sister of one family dies, the older brother of the corresponding family has the right to take the remaining sister, and the younger brother is left without a bride (and *vice versa* if the elder brother should die). In such a case a quarrel between the two brothers is likely to result. Later on, if the elder brother should die, the younger would succeed to the right to his brother's widow.

It is generally understood that if a man should die, his sib-friend's son is to take care of his widow. But this case must not be regarded as a real marriage. The widow is simply taken so that she may be cared for. If the deceased's sib-friend has no son, the brother of the sib-friend's son or his cousin takes charge of the widow. In return, she works for her protector and his father.

In case the *mundū* should die, he is replaced by his brother after the funeral ceremony, as described above. If there is no brother, a cousin of the same age-class and sib is substituted.

In case the number of persons needed in the exchange system should prove uneven, the person left from one system is allowed to take a person remaining from another system. Should such an occasion occur, there would be no *mundū*.

The Buying of Women

The man, however, is then supposed to give presents for the woman he takes. If it should happen that a woman is obtained from another tribe, she is paid for with pots, usually ten in number. This case appears to me to be significant and to hint at the way in which in other parts of New Guinea the institution of buying the women may have arisen.

This theory is corroborated by a special case of the second form mentioned above, *i. e.*, the mutual buying of sisters of the relative bridegrooms, met with in the Buin country on the island of Bougainville, Solomon Islands, which is there considered the orthodox form by the people.[1]

If, on the other hand, mutual exchange (the first form) cannot take place, on account of lack of women, objects of value are substituted to make good the balance, as will be shown by the instance of the Bánaro tribe.

Certain goods, so it seems to me, acquired buying power because they were taken in exchange for women, and thus became primitive money. The value of these goods increased in the same measure as the buying of women became prevalent. On the other hand, the buying of women might have been an outcome of difficulty with the above-mentioned system, wherever there was a lack in the number of participants. This, in my opinion, led to a simplification of the marriage system by the giving of economic valuables in requital, instead of proceeding to "natural exchange."

These two forms of contracting a marriage may be regarded as the only business-like ways of acquiring wives. In various places, however, it has happened that women were given away without any special equivalent. This seems to have occurred in one or the other village if a notable excess in the number of marriageable men or women brings about difficulties in obtaining corresponding mates. Thus *e. g.* the coast village of Manam, the village of Kambót (on the Kerám) and Kumbrāmbra are mentioned as enjoying a surplus of women whereas Imutó (in the swamp region of the Sepík) and

[1] *Cf.* The writer's *Forschungen auf den Salomo-Inseln und dem Bismarck-Archipel* (Berlin, 1912), vol. III.

Tjímundo (on the Kerám) are reported as places where the number of males is preponderant. As a result of the small number of males in Kambót a strange custum is disclosed, namely, the rape of young marriageable men. If there is no suitable mate for a girl her father accompanied by some of his friends calls on a neighboring village, for instance Tjímundo, and lures one of the young men whom he intends to catch into the forest. There they overpower him and bring him either to their village or a hiding place in their forest where he is kept by the girl and her relatives. When the rumor reaches the father he starts to seek his son. In the meantime the girl's relatives plant yams and care for the food of the abducted youth. At last he acquiesces. The kidnaping is a ceremony introduced to avoid an unusual procedure, that of a man going to the woman's village. It seems that a previous understanding among the participants has taken place. This ceremony is however not in common use but is an exception.

Socializing Influence of the System

The exchange system maintains a great socializing influence, for by its means all members of the tribe are connected with, and dependent on, each other. This appears in the different ceremonials where persons are assigned special functions, as well as in the marriage system, which has spread a network of all kinds of relationships, not only over the gens, but over the tribe itself.

The working of this system of ties could well be felt when I tried to recruit a boy from the Bánaro tribe for service with the expedition. Of the boys who served me as informants, one (Yómba) was a single man from a gens of the Bánaro tribe, the other (Mánape) from the Rámunga tribe. It was impossible, however, to get another boy, in spite of friendly relations, for there was no one to spare, each man having his special part to play in the social system.

Psychological Basis

The marriage regulations exist as a means of insurance against the disturbing influence of the emotions upon social life; for social life depends upon a certain established harmony between emotion

and intellect. If the intellect encounters emotions with which it cannot successfully cope, social life is disturbed by internal friction, because of blunders committed by members of the social group. Now, whether this is because, in a particular case, the emotions are relatively too strong, or the intellect too weak, and therefore the presence of mind needed in adapting itself to unexpected situations is insufficient, the establishment of regulating forms, laws, and ceremonies is required. The more formulae of this kind pervade life, the more we may expect to find a relative insufficiency of intellect in dealing with the emotions. The social group erects rigid barriers in order to lead emotional life into well-defined channels. This applies especially to all phenomena connected with sexual life, and with the reproduction of the race.

For this reason no external pressure is needed to enforce such customs; they are considered quite a matter of course, and not to be criticized.

Counting of Descent and the Origin of Exogamy

Now, if we inquire how descent is counted, we notice a queer combination of both female and male influence. Practically, the children are their mother's, and her husband seems to be selected only in order to protect her and her children. He is merely the protector of his wife's family.

Thus, the sibs and the gentes are organized upon the men, and it is through them that exogamic marriages are reckoned. This leads us to the theory already mentioned, that the exogamic regulations may have originated from an understanding between gentes, formerly hostile, but afterwards agreeing to peaceful relations. These were sealed by the exchange of women, and might thus be said to have had a political origin.[1]

[1] I noted such an instance in Popoko, an island off the coast of Bougainville, *Zeitschrift für Ethnologie*, 1909, p. 514. In Buin a man may not marry before he has killed another man. This theory of exogamy would be in harmony with John Mathew's explanation of the origin of the Australian "phratries" as the amalgamation of two distinct ancient races (*Journal Royal Anthropological Institute*, 1910, p. 166). It would also coincide with H. Cunow's view (*Zur Urgeschichte der Ehe und der Familie*), as discussed by A. A. Goldenweiser, *American Anthropologist* (N.S.), 1913, p. 215. That the exchange of women originated as a token of friendship and peace-making is especially supported by the examples of exchanged gifts, produced by E. Crawley, *The Mystic Rose*, 1902, p. 248–9.

It seems to me, however, as if the much-discussed question regarding the origin of exogamy should be stated somewhat differently.

It has often been emphasized, and seems to be proved by psychological research, that a certain strangeness works as a sexual stimulus. The contempt visited upon incestuous unions is mostly based upon this fact. On the other hand, an exogamy in the form of an unlimited liberty of choosing the mate is never really found. What is particularly striking to us, is the sharply restricted limitation in the number of groups from which a selection may be made. Practically, we see certain groups united by a *connubium*.

As we have certain limitations to deal with here, it would seem preferable to speak of a "marriage regulation," rather than of an "exogamy." This "exogamy," regarded from the point of view of such limitations, would often be better classified as an "endogamy." We ought, therefore, to consider rather the origin of the marriage regulations. My solution of the problem has been suggested above.

There is no doubt that the regulation of marriage in the form of the so-called "exogamy" has important biological consequences. It gives us a hint as to how we may account for the many distinct types of man we encounter in relatively small areas. Whereas the physical types are conditioned by the intermarrying of a very limited number of small exogamic units, the various linguistic and cultural types find their explanation in the isolation of the groups practising the exogamy. This "exogamy," within a very restricted number of small groups, is practically an "endogamy," resulting in inbreeding on account of an intermingling of a restricted set of persons throughout many generations.

Economic Influences

The grouping of kinship depends upon the complex living conditions of the tribe. These conditions are again dependent upon the method of getting the food supply, and the perfection of the particular tools, *i. e.*, the economic status. In this way the whole system of relationship comes to be influenced by economic principles, based upon the possession of property.

Among the Bánaro the economic unit is the sib. It is the sib that has definite claims to the sago places, hunting districts and plantation grounds. These localities are identified by certain names and the boundaries marked by creeks, swamps, big trees, grass limits, ravines, bends of the river, etc. The owners as well as the other members of the tribe know these localities and are aware of the traditional rights to them.

The ties of kinship are associated with the common holding of the land. The *connubium* tends to preserve the claims on a certain territory within a restricted number of people. In consequence of the marriage prescriptions the origin of the persons entitled to exploit the land is limited, so that the offspring derives its rights through kinship to members of the community. Individuals have no claim of ownership or rights of disposal over the ground. Therefore we cannot speak of a transmission by inheritance, as the sib is not like a person, capable of death. The right of a person depends on his situation in the social complex. Hence the importance of stating the relationship.

Even the earnings of a boy recruited for service with the white man fall to his sib as a requital for the absence of his working power claimed by his sib. Whatever he brings home is distributed among his kinsfolk.

Individual property is confined to the products of the labor of the individual. The tree, for instance, that a man plants, or the fish that a man catches, or the weir that a man weaves, or the stone axe he puts together, belong to him as the fruit of his labor. This individual property is of a very temporary character, for the crops of the plantation are consumed when they are ripe, and the few tools are used up after a relatively short time. If a man should die, they are burned, and buried with him, for they are considered as a sort of personal appurtenance.

Under primitive conditions as dealt with here individual property is generally too transient to be transmitted. It is only on higher stages when the accumulation of property becomes important, that conditions change.

Especially if the population becomes dense in comparison with

the area providing food, and a more intense exploitation of the soil becomes necessary, does the value of the land rise. Its possession then becomes an important factor, so that the transmission of inheritance rights is carefully watched and calculated.

If it is a question of valuables to be inherited, an exact reckoning, in either the male or female line, must be considered, and one or the other system adopted.

If a *mundū* system were confronted with a development in the suggested direction, it is just as probable to suppose that the result would turn out patriarchy as mother-right, for the husband in the Bánaro organization is, as we have seen, "the head of his wife's family." Certain modifying ideas or other influences might then tip the balance towards the establishment of the one or the other institution.

Real and efficient economic exploitation of resources cannot of course be carried through with primitive or even refined tools by any people. For civilized man, as well as the savage, is never an economic being alone, but in his desires and aims is "disturbed" by a great many other factors that have nothing to do with economics proper. Among these disturbing factors are many which we are inclined to call prejudices if we find them among other peoples, but which are generally clad in high-sounding names if we ourselves are concerned. However it may be that these spiritual motives, magic, ceremonies, customs (*e. g.*, exogamy), laws and so on, these systems growing out of simplifications, abstractions, and associations of phenomena nevertheless exercise their influence upon an efficient economic exploitation through the technical means of a given people.[1]

I think however we ought not to forget the importance of the economic factor in considering primitive social systems. The individualization of an originally supposed group marriage has possibly been brought about by the importance of the labor of the women claimed by certain men, though of course I should not reject the influence of ideas, as introduced by migrating people. But I

[1] But I should not care to go as far as Ernst Grosse in his *Die Formen der Familie und die Formen der Wirtschaft* and endeavor to establish a strict dependence of kinship organization upon certain economic stages and correspondingly a classification of the different economic stages.

hold that such ideas, even if they do survive to some extent, may in the lapse of time be absorbed because of the necessity imposed by the conditions of life.

The Bánaro System and Prevalent Theories

How does the Bánaro system fit into the prevalent theory of a Melanesian exogamic patrilineal, and a Papuan endogamic matrilineal system?

Certainly neither the one nor the other finds definite expression here. The question arises, whether we can regard the division of each gens into two sibs as an essential feature of the system. We must bear in mind that, not the sibs, but the gentes are the units in the exogamic system, and that for this reason they cannot be associated with the so-called two-class system. On the other hand, the exogamic gentes are not properly totemic. It would better be considered as a mixture of the two systems. I think that the theory of a Melanesian invasion into Papuan country appears to be well founded in this case. Besides, it is supported by their material culture. As has already been stated, these people belong to the pot-makers, and are provided with heavy arm shields, as well as with light shields for protecting the back. They share the possession of bow and arrow with the Papuan people of the interior. Such a mingling of cultures has certainly taken place in several parts of interior New Guinea, as, for instance, on the middle Sepík.[1]

The customs described here are not confined to the Bánaro

[1] That pile-houses are associated with Graebner's so-called bow culture does not hold true in all cases. I found houses without piles, ground-houses, in bow regions, on the southern slopes of the northern Coast Ranges in the Dallmannhafen district, and pile houses in the area of the dart, *Wurfpfeil*, where the bow is unknown. The so-called Melanesian bow pervades the entire interior of New Guinea and is used by all Papuan peoples as far as the Sepík river system is concerned. Pile-houses, in my opinion, are built for protection against the occasional inundations which occur nearly everywhere on the banks of the Sepík river as well as on its tributaries. It must be remembered that the heavy rains and the rising water below suggest more solid houses. Ground-houses are found only in relatively dry regions where inundations need not be feared. Devices of eminently practical importance may, in such cases, if not invented independently wherever needed, spread far more quickly than other features less important to life, as for instance the gable roof.

tribe alone, but are also essentially evidenced in the neighboring areas in the lower villages of the Toepfer river and adjacent territory, *e. g.*, Búnaram, Rámungá, Búegendum, Kambót (Tjámbo), Yérambo [Gorogopá] (Engáleb), Kamén [Kumbrágumbra].

Suggested Origin of the Bánaro System

The origin of the regulations we have to deal with in this particular case could be traced back to a limited group marriage system. But I should not like to go so far as to deduce the Bánaro system from the group marriage system proper, in the sense of a supposed promiscuous communion between a group of men and a group of women. To understand the Bánaro system, we must go back to the gerontocracy, which in all these communities is the leading factor.[1]

The system probably originated in this way: the daughter of one gens was given in exchange for the daughter of another gens. The father of the daughter, as the owner of the girl, therefore has the first right to the woman newly received in exchange from the other gens. The new girl takes the place of his daughter. This association explains, why he is "ashamed" to have anything to do with her, and cedes his right to his brother or to some other relative of his age in the gens.

Later on, the woman is assigned to a man who takes care of her and her children. Instead of allowing the whole tribe to share his woman, the participation of the tribe is individualized. This probably came about on account of quarrels or disputes, especially as the labor of the women became an economic factor for the men. Thus, intercourse is restricted to the son of the man who introduced her into sexual life, and this man is allowed to have community with her only on certain occasions.

Out of the individualization of the sharing in possession of the woman received into the gens, the division of the gens into sibs might have originated. Later on, the individual participation of the other moiety may have been regulated according to the principle of requital.

[1] As to the rôle the gerontocracy plays among the Australian tribes, compare Rev. H. Mathew, *Zeitschrift für Ethnologie*, 1906, p. 944.

Through the exercise of their *mundū*-rights, the two sibs are constantly related to each other as half-brothers, half-cousins, uncles, and aunts.[1]

Gerontocracy and Magic

The essential features of the system we have to deal with here, are as follows:

1. The exchange of women between two groups, based on the psychological principle of requital, a principle that regulates the social relations of a community among such of its members as are equal in age or sex. It may also be applied to the making of peace with formerly hostile communities, or the socialization of foreign groups.

2. This special kind of system has been brought about by the political form of the gerontocracy. The old men are the determining factor for external relations (war and peace) and internal life (*e. g.*, the repartition of land for plantation purposes, hunting grounds, etc.). They derive their power from the real or asserted knowledge they possess.

Ceremonies, especially such as are in connection with the materialization of the goblins, are kept secret. The arranging of the dances, the making and ornamenting of the masks, and, above all, the whirring of the bullroarer and the fluting of the bamboo pipes, are hidden from the people. In these are contained the charms for securing the help of the superhuman powers, on which success in life depends. Only with the lapse of time are the male members of the community successively initiated into the magico-religious ceremonies.

These secret ceremonies contain the sum total of the people's knowledge, representing a kind of primitive science adapted to the supposed pleasing of the goblin. Disease and suffering, defeat in

[1] The partition into *tauvus* reported by A. M. Hocart, "The Fijian Custom of Tauvu," *Journal Royal Anthropological Institute*, 1913, p. 101, may refer to a similar grouping. "Two groups that are *tauvu* to each other exercise in their mutual relations certain privileges and ill manners." The word *tauvu* is also explained as meaning something like brother, or "having a common ancestor" (pp. 101, 102). Hocart refers further to the cross-cousins' right to take each other's property.

the fight, are considered as consequences of the wilful malice of the capricious goblins, and must therefore be prevented or remedied in connection with the supposed cause.

This knowledge, by the way, is often of what we should term a magical kind. We, from our point of view, discriminate between magical and, say, therapeutic means. To them, in general, medical science and magic are one and the same thing. It is we, who, according to the level of our experience, make a distinction between the two which is not felt by the native.

Difference in point of view ought also to be taken into account in a consideration of the exchange system, which must in no way be regarded as debauchery, but as the outcome of a moral and religious creed for the regulation of the most important problems of social and individual life.

The gerontocracy exercises its influence by theocratic means. But its power must not be overrated. The sway of the old men is not absolute. They exercise their power, not by command, but by advice. The boy or young man may or may not obey. The outcome of each particular case is the resultant of two forces: the authority of the particular old man concerned, and the relative courage of the younger man. But practically, the community is dominated by the influence of a few old men, to whose decisions the people consent.

This, in brief, is their political system: The old men give their tutorage in magic, etc., to the people, demanding a certain amount of deference and allegiance from them in return. On this basis are built up nearly all primitive political systems in the South Seas.

The attitude of the people to the gerontes is transferred to the relation between the living and the dead, just as their idea of future existence is modeled after the world of the living. The ceremonies in connection with the dead are carried out along the same lines as the initiation ceremonies; which shows us the relation between the different rites executed.

A distinction is made between the spirits of the dead and the children of the dead who are born in the other world, the latter being the real goblins.

There is no doubt that the two leading factors, gerontocracy and magic, have not a local, but universal application, since they do not occur only among the Bánaro, or even the New Guinea or South Sea people. It is hardly necessary to recall that *pater* originally did not designate "father" in our sense of the word, but was rather a synonym for *rex*.

Linked Totems and Sibs

The division into two sibs gives us a clue, I believe, as to how we should account for the origin of the so-called "linked totems."[1] If each sib possesses a special totem, these totems are linked by the ties of the common gens.

However, as far as my research work has succeeded in establishing, I should not feel justified in calling the Bánaro tribe totemic. But the people worship ancestors, whom they occasionally represent as carved wooden images. They observe different kinds of food restrictions in age-classes, and for certain periods. They have various legends connected with animals and plants, and, as far as my information reaches (which for the moment is not all available), also certain associations between these ancestors and some animals.

System and Method of Thinking

We have just considered the political and religious system. A system, however, is in general nothing else but a simplification of the complex and manifold in our own minds. Things as heterogeneous as the world of the living and the world to come are brought under one and the same head, *i. e.*, simplified after the same principles.[2]

Thus the rites connected with the dead are regarded in much the same way as the puberty initiation. The whole marriage

[1] See A. Lang in *Man*, 1909, 2 and Seligmann in *Man*, 1909, 3, referring to the Wagaga system in the Milne bay district.

[2] The value primitive Australians ascribe to a system is vividly illustrated by the famous marriage organization of the Arunta and Chingalee, reported by R. H. Mathews, Spencer, Gillen, and others. A. R. Brown draws special attention in *Man*, 32, 1910, to the fact that if an Arunta does not marry into his regular class, his children nevertheless belong to that class. Analogously, with the Chingalee the offspring of an unorthodox marriage belongs to the class the system requires.

system is a simplification of the complex sexual relations and the apportioning of the offspring according to the principle of requital.

It is this that used to be termed the "undifferentiated life" of primitive peoples; namely, the systematizing of matters, heterogeneous in our minds, after one and the same scheme.

In this different method of thinking lies hidden the divergence of primitive and modern systems. Primitive systems are not necessarily simple; they may be just as complicated as ours. Thus, we cannot speak of an evolution from simpler to more complicated forms. The social system presented here is rather involved. The Papuan languages are very intricate, and as far as we know the events of the Papuan and Melanesian history are certainly manifold. Primitive logic is not different in itself from civilized logic, but it is based on a more limited experience, and in consequence the notions drawn from this experience differ from ours. Our notions, derived from richer resources, have a different application. They are more differentiated and individualized. Our method of thinking has become analytical, whereas primitive thought considers a phenomenon as a whole, without resolving it into elements.[1]

Similar Systems Reported

On account of the general prevalence of these principles, we might expect to find this system, of course with due alterations, widely spread among the South Sea peoples and indeed, it seems to me that we are not lacking in instances.

I might perhaps first call attention to my own experiences in another field of research in the South Seas, namely, in the Buin district of Bougainville, Solomon Islands.[2] There I was told as cited above that the exchange of women is considered the orthodox form of marriage, although the buying of women is practised in this region. In the ideal case the brother of the bride takes the sister of the bridegroom. On such an occasion the buying is not

[1] *Cf.* "Ethno-psychologische Studien an Südseevölkern," *Beiheft 6 der Zeitschrift für angewandte Psychologie*, 1913, pp. 102–3.

[2] *Cf. Forschungen auf den Salomo-Inseln und dem Bismarck-Archipel*, 1912, vol. III, p. 18.

eliminated, but the payment of an equal amount of money and wares is carefully executed, so that the price for the brides is evenly exchanged.

W. H. R. Rivers, in his comprehensive *History of Melanesian Society* (II, pp. 23, 123), reports only a limited number of cases with the exchange of the sisters of the two bridegrooms. One case has been reported from the south of New Guinea by the Torres Straits Expedition.[1] P. F. Vormann remarks upon a similar custom among the Monumbo tribe in northern New Guinea, east of the mouth of the Ramu river.[2]

Dr. Rivers however emphasizes the so-called cross-cousin marriage, and undertakes to show how widely distributed this custom is. According to his *History* (II, p, 24) and his *Kinship and Social Organization* (p. 43–5), he seems to think that the cross-cousin marriage is prior to the exchange of sisters.

In the sister's exchange system, the relationship of the sisters' parents is either not taken into account, or the parents are supposed to be unrelated to each other. This feature distinguishes it from the cross-cousin marriage.

As things practically stand in New Guinea and Melanesia, we generally have to deal with small tribes of from a hundred or less to a few thousand heads, divided into certain groups, say gentes. As a rule, only neighboring gentes intermarry. It is a well-known fact, that the further back we go in any line of descent, the greater becomes the number of a man's ancestors. For this reason a close relationship must prevail among the members of the gens-exogamic but tribe-endogamic community, and a strong inbreeding, shaping the characteristics of each tribe, is maintained.

Therefore, even if the relationship of the exchanged sisters is not reported, we may not classify them as non-related. We have seen that in the Bánaro tribe cousins are substituted for sisters. And we shall find out from the instances in the classification of relationship terms that there is no discrimination made between sisters and cousins.

[1] *Report Cambridge Expedition to Torres Straits*, V, p. 125.

[2] *Anthropos*, 1909, p. 660 *seq.*, also 1910, p. 407 *seq.*

It seems to me, therefore, that we should not draw a sharp line of demarcation between the sisters-exchange and the cross-cousin marriage, and that the many cases of so-called cross-cousin marriages reported by Rivers are but instances of the exchange system.

The so-called group marriage of the Hawaiian *punalua* seems in some degree similar to the above mentioned system. As a result of his investigations, Rivers refutes the theory that the *punalua* is an instance of promiscuous sexual relations, as was formerly considered. Although he admits a certain sexual laxity, he emphasizes individual marriage.

Rivers (1, pp. 385–6) reports the following instance on the occasion of investigating a certain pedigree. In this case, as the marriage of a couple remained without issue, the husband of the wife's sister was called upon, and the result was the birth of a child. The other man that intervened was called the husband's *punalua*, his function having been somewhat like that of our *mundū*.

The case reported must not be considered unique. We are told that a system existed "in which the paramours had a recognized status." Of the paramours Rivers, (1, p. 387) says,

> Those who would seem to have had the most definite status were certain relatives, viz., the brothers of the husband and the sisters of the wife. These formed a group within which all the males had marital rights over all the females, and I am told that even now, nearly a century after the general acceptance of Christianity, these rights of a "*punalua*" are still sometimes recognized, and give rise to cases which come before the law courts, where they are treated as cases of adultery. In addition to these "*punalua*" who had a recognized status owing to their relationship to the married couple, there were often other paramours, apparently chosen freely at the will of husband or wife.

Although this custom differs in some respects from the Bánaro system, it seems to me essential to show that it is the brothers or sisters who share the marital rights in the Hawaiian Islands, whereas among the Bánaro it is the sib, *i. e.*, the lines of two interrelated friends of the same gens. Thus, the *punalua* custom would be rather a slight variation of the same fundamental social institution.

I think the sexual laxities reported in the Hawaiian Islands might be interpreted from the point of view of the Bánaro system.[1]

The second feature of the Bánaro system has been found to result from the rôle of the gerontocracy. Our attention has been called to the distinction between cases of occasional prerogatives and enduring marriage.

The question arises whether we find similar prerogatives anywhere else in the South Sea islands. It seems to be more than a mere coincidence that the *jus primae noctis*, or better, *primarum noctium* is reported from these same Hawaiian Islands[2] from which we have heard of the *punalua*. But the institution appears in a somewhat changed form. The families of the chiefs there form a distinct part of the remaining population, and have their own regulations to maintain their race. Since they are not numerous, marriage among consanguineous relatives has resulted as instanced in the royal families of Siam or old Egypt. This suggests that they may be the descendants of an ancient invading race. But it seems that when they conquered the islands, the rights of the former gerontocracy were assumed by the new rulers.

This is corroborated by a parallel instance reported from the Marshall Islands by P. A. Erdland[3] in reference to the girls of the chief's caste. A girl of this status is initiated by the chief himself, even if he happens to be her own father. While the initiation ceremonies are going on the parents refrain from intercourse.

[1] A custom somewhat similar to that of the Bánaro *mundūs* is reported by E. W. Nelson, *Eighteenth Annual Report, Bureau of American Ethnology*, Part I, Washington, 1899, concerning "the Eskimos about Bering straits," p. 292: "It is a common custom for two men living in different villages to agree to become bond-fellows or brothers by adoption. Having made this arrangement, whenever one of the men goes to the other's village he is received as the bond-brother's guest and is given the use of his host's bed with his wife during the stay. When the visit is returned the same favor is extended to the other. Consequently neither family knows who is the father of the children." Exchange of wives together with exchange of property is also reported from Eskimo tribes of the east coast of Greenland, by Holm, *Angamagslikerne* 34, 50–56, 112, 117, 162.

[2] Rivers, I, p. 386.

[3] *Anthropos* 4, 1909, p. 112. "Die Stellung der Frauen in den Häuptlingsfamilien der Marshall Inseln."

I have been informed that in the Marshall Islands before the influence of the missionaries was so great brothers could share their marital rights (in a similar way as in the Hawaiian Islands). The ideal marriage was considered that between two cousins descending from one pair of grandparents, one cousin having a brother as his father, the other one having a sister as her mother. Cousins having two brothers as fathers or cousins with two sisters as mothers must not marry each other.

It seems as if the partition of the villages of the Pelew people into *kaldebékels* (village-groups) reported by Kubary[1] (pp. 63, 83) corresponds in some degree to the division of the Bánaro tribe into sibs, especially as the *armengól* institution, a kind of limited group intercourse, seems closely associated with it.

This Pelewan institution (p. 51) appears to represent a less elaborate and less restricted system of group intercourse, which is also limited by a number of strict external forms. It is significant that the initiator is found in the person of the first chief. As there is no exchange of women among the *kaldebékels*, a special system of rewarding the girls is established. That the girls in Pelew, as well as in Yap, go into another village in order to enter a boys' club-house for some months as *armengóls* (p. 52, 91), may well be interpreted as a relic of an original exchange system, but simplified into a system of economic reward. That the girls of a vanquished village are taken for the *kaldebékels*, seems to point to an origin from pacification after warfare as a pledge of good faith. But there are also signs of an acknowledged exchange of women (p. 141).

Similar customs are reported from Ponape by D. A. Hahl,[2] and about the Uritan houses on the Marianen Islands by G. Fritz.[3]

Rivers, arguing from his interpretation of the terms of relationship, discusses several curious cases of supposed intermarriage, as for instance a marriage with the brother's granddaughter, father's sister, wife of father's or mother's brother, or wife of grandfather.[4]

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[1] *Die socialen Einrichtungen der Pelauer*, Berlin, 1885.

[2] *Ethnologisches Notizblatt* II, 2, 1901, p. 11.

[3] *Ethnologisches Notizblatt* III, 3, 1904, pp. 84, 85.

[4] Rivers, I, p. 185, II. p. 110, 114, 118, 327, 508.

In these cases we may perhaps have to deal either with occasional sexual relations, as shown in the Bánaro case, or with other institutions which I wish to consider later on, namely, with a kind of insurance or maintenance, where the brother of the husband, etc., takes the widow of the deceased. Such cases of post-marriage are often not regarded as real marriages when I heard them reported in the South Seas. This question shall also be dealt with in connection with the terms of relationship.

But what I want to emphasize is, that we should sharply distinguish among institutions with premarital sexual relations, the real marriage, and a post-marriage, such as, for instance, the Bánaro's method of caring for widows.

As these relations are of great importance, they are all reflected in the terms of relationship, but as a matter of course, indiscriminately; and therefore I think we should be cautious in interpreting the terms of relationship from the denominations alone, but must always try to ascertain the real customs, institutions, and ceremonies, by which they are accompanied, and which pervade the people's life.

II. THE KINSHIP SYSTEM

In the first part I endeavored to describe the social organization of the Bánaro tribe; the second part will be devoted to the terms of relationship. These terms are presented under different arrangements: the first table shows the different degrees of relationship according to our method of grouping; in the second table the various relations that each native term embraces are collected; the third table combines terms of special importance.

The terms under consideration here are used with the prefix for the third person. This prefix is connected with the term by means of a hyphen. The prefix for the third person is *ma-* or *me-*, as in *me-mẽaṅ*, his son. The Bánaro, it may be added, employ *na-* or *ne-* for the second person, as in *ne-mẽaṅ*, thy son; the first person is designated by *ṅna-* or *ṅne-*, *ṅna-mẽaṅ*, my son. There is also a vocative for certain terms of close relationship. This is generally denoted by the stem without the prefix.

TABLE I

Grouping of Relatives[1]

1. Matrimonial and semi-matrimonial relations

(a) Matrimonial relations:

W—M	her husband *mu-móna* vocative: *mom* a man with two wives, *mai-de-ngíniṇ*	M—W his wife *mu-máia* vocative: *máia* his first wife *mu-màia āp* his second wife *mu-mài-engóm*

IW—IIW or IIW—IW the two wives to each other, *mu-ná ma*

(b) The goblin-initiator's relation:

μ_1—W_2 μ_2—W_1	the woman he initiated = his sib-friend's daughter-in-law *mu-ngóm* or *mundū-mungóm*	W_2—μ_1 W_1—μ_2 her goblin-initiator *mi-tjóñab* (or *mi-tjóiñ*)

(c) The sib-friends:

M_1—W_2 M_2—W_1	his sib-friend's wife *mundū-maháia* or *mundū-miniák*	W_2—M_1 W_1—M_2 her husband's sib-friend or her sib-friend's husband *mundū-mumóna* or *mamanu-mumóna*

2. Relations brought about through marriage betweeen gentes

(a) Within the generation of the parents:

μ_A—μ_B	and *vice versa*, his child's father-in-law: *mu-ñáiepui* (or *mu-máiepui*)
$\varphi(B \to A)$—$\varphi(A \to B)$	and *vice versa*, her child's mother-in-law: *mu-nàiepui menági* or *mu-náma*

[1] If the designation for sib (1, 2) or for gens (A, B, C, D) is omitted, the relation is understood to be within the same aggregation. The terms are here used in the third person, if not otherwise indicated.

μ_A—$\varphi(A \to)B$
μ_B—$\varphi(B \to)A$ } his child's mother-in-law (in the case of exchange-marriage: his sister) *mu-ñàiepui menígen*

$\varphi(A \to)B$—μ_A
$\varphi(B \to)A$—μ_B } her child's father-in-law (in the case of exchange-marriage: her brother) *mu-ñàiepui menági*

If the mother comes from a gens different from that which her daughter enters by marriage:

μ_A—μ_B
$\varphi(C \to)A$—μ_B
μ_B—$\varphi(C \to)A$ } { elder to younger parents-in-law *me-mbán*(?) / younger to elder parents-in-law *m-andū*(?)

$\varphi(C \to)B \times^1 \varphi(D \to)A$ mothers-in-law *mu-náma*

(b) Within the middle generation:

Because marriage is arranged only between the members of the same sib of different gentes, the sib designation is suppressed in this part for sake of simplification

M_A—M_B
M_B—M_A } { elder (firstborn) to his younger brother-in-law: *ma-táini* / younger to his elder (firstborn) brother-in-law: *mu-o̱o* / younger to elder but not firstborn brother-in-law: *m-áñaro*

$W_{(B \to)A}$—$W_{(B \to)A}$
$W_{(A \to)B}$—$W_{(A \to)B}$ } { her sister-in-law = / her husband's sister, vice versa: *m-eiáma*

M_A and $W_{(A \to)B}$ brother and sister after marriage { $W_{(A \to)B}$—M_A: *mu-kúdi* / M_A—$W_{(A \to)B}$: *mu-mágendoñ*

$W_{(B \to)A}$—$M_{A/b}$ her husband's brother: *mu-kúdi*

$M_{A/b}$—$W_{(B \to)A}$ his brother's wife: *mu-mágendoñ*

M_A—$M_{B/b}$ his younger brother-in-law's younger brother: *ma-tàiñi miljóñ*

$M_{B/b}$—M_A his elder brother's elder (firstborn) brother-in-law: *mu-o̱o*

$M_{A/b}$—$M_{B/b}$ his brother's younger brother-in-law's younger brother: *ma-tàiñi miljóñ*

$M_{B/b}$—$M_{A/b}$ his elder brother's elder brother-in-law's brother (not the firstborn): *m-áñaro*

$M_{A/b}$—$W_{(B \to)A}$ his brother's younger brother-in-law's wife: *ma-tàiñi menígen*

$M_{B/b}$—$W_{(A \to)B}$ his firstborn brother's elder brother-in-law's wife: *mu-o̱o menígen*

$M_{A/b}$—$W_{(C \to)B/b}$ his elder brother's elder brother-in-law's brother's wife: *m-àñaro menígen*

$W_{(B \to)A}$—$W_{A/c}$ her husband's sister: *m-eiáma(ñ)*

$W_{A/c}$—$W_{(B \to)A}$ her brother's wife: *m-eiama(ñ)*

[1] × indicates reciprocal relation.

(c) Between the first and second generations

(α) *direct*

μ_A—M_B his daughter's husband = his son-in-law: *mu-mûeka*

φ_A—M_B her daughter's husband = her son-in-law: *mu-mûeka*

μ_A—$W_{(B \to)A}$ his son's wife or his stepson's wife = his daughter-in-law: *mu-ngóm*

φ_A—$W_{(B \to)A}$ her son's wife = her daughter-in-law: *mu-ngóm*

(β) *Combined with collaterals.*

μ_A—$M_{B/b}$ his daughter's husband's brother = his son-in-law's brother: *mu-mûeka* his son-in-law's firstborn brother: *mu-táta*

μ_A—$W_{B/c}$ his daughter's husband's sister = his son-in-law's sister: *maiùk-mûek*

φ_A—$M_{B/b}$ her son-in-law's brother: *mu-mûeka*

φ_A—$W_{B/c}$ her son-in-law's sister: *mu-ngóm* her son-in-law's firstborn sister: *mu-máiń*

(d) Changing of terms within the family

After marriage:

$W_{(A \to)B}$—μ_A the daughter calls her own father: *rü* (vocative)

M_B—μ_A his wife's father = his sister's father-in-law = his father-in-law: *mu-táta* (or *mu-ńiō-ńiō?*)

M_B—φ_A his wife's mother = his sister's mother-in-law = his mother-in-law: *me-niginik*

$W_{(B \to)A}$—μ_A her husband's stepfather: *mun-áta* her husband's father = her father-in-law: *mi-tjóńab* or *mi-tjóiń*

$W_{(B \to)A}$—φ_A her husband's mother = her mother-in-law: *mu-máiń*

$M_{B/b}$—μ_A his brother's wife's father (father-in-law): *mu-táta*

$W_{B/c}$—μ_A her brother's wife's father (father-in-law): *mu-táta*

$M_{B/b}$—φ_A his brother's wife's mother *me-níginik*

$W_{B/c}$—φ_A her brother's wife's mother *mu-máiń*

μ_A—$W_{\cdot_ \to)B}$ the father continues calling his daughter: *ńne-iúk* (first person)

M_A—$W_{(A \to)B}$ the brother calls his sister who married his wife's brother: *mágendoṅ* (voc.)

M_A—$W_{(A/c \to)C}$ his otherwise (not in exchange for himself) married sister: *iukróiṅ* (voc.)

$W_{A/d}$—$W_{(A/c \to)C}$ her married sister: *iukróiṅ* (voc.)

$W_{(A \to)B}$—M_A the sister calls her brother who married her husband's sister: *kúdi* (voc.)

$W_{(A/c \to)C}$—M_A her otherwise (not in exchange for herself) married brother: *kudi*(?)

$W_{(A/c \to)C}$—$W_{A/d}$ the married to the younger unmarried sister *iukróinoṅab*(?)

3. RELATIONS BROUGHT ABOUT BY EXTRA-MARITAL UNIONS BETWEEN THE SIBS

As here only relations between sibs are concerned the gens designation between the first and second generation is omitted.

(a) Between the first and second generations

(α) *Within the gens*

μ_1—W_2, μ_2—W_1 his sib-friend's daughter-in-law whom he initiated as goblin: *mungóm* or *mundū-mungóm*

φ_1—W_2, φ_2—W_1 her husband's sib-friend's daughter-in-law = the woman whom her husband initiated as goblin: *mungóm* or *munàma-mungóm*

μ_1—M_2, μ_2—M_1 his sib-friend's son = the initiated woman's husband: *mundū-memẹ̄aṅ*

φ_1—M_2, φ_2—M_1 her husband's sib-friend's son = the husband of the woman whom her own husband initiated: *munàma-memẹ̄aṅ*

W_2—μ_1, W_1—μ_2 [1] her father-in-law's sib-friend = her goblin-initiator: *mi-tjóiṅ* or *mi-tjóṅab* or *ṅnaió-wuri*

W_2—φ_1, W_1—φ_2 her husband's father's (father-in-law's) sib-friend = her goblin-initiator's wife: *ma-mùṅ mu-máiṅ*

M_2—μ_1, M_1—μ_2 his father's sib-friend = his wife's goblin-initiator: *mo-óro* (or *mun-áta*?)

M_2—φ_1, M_1—φ_2 his father's sib-friend's wife = the wife of his wife's goblin-initiator: *mundū-mumáia*

[1] She avoids calling him by his proper name.

(β) With the other gens connected by marriage

μ_{A1}—M_{B2}	his sib-friend's son-in-law: *mundū-mumúeka*	M_{B2}—μ_{A1}	his wife's father's (father-in-law's) sib-friend = his sister's initiator: *mundū-mutáta*
μ_{A1}—$W_{(A2 \to) B2}$	his sib-friend's married daughter: *mundū-mungóm*	$W_{(A2 \to) B2}$—μ_{A1}	her father's sib-friend: *mundū-mitjóñab*
$\varphi_{(B1 \to) A1}$—M_{B2}	her sib-friend's son-in-law: *mundū-munúeka*	M_{B2}—$\varphi_{(B1 \to) A1}$	his wife's mother's (mother-in-law's) female sib-friend: *mundū-menígink*
$\varphi_{(B1 \to) A1}$—$W_{(A2 \to) B2}$	her sib-friend's (married) daughter: *mundū-mungóm*	$W_{(A2 \to) B2}$—$\varphi_{(B1 \to) A1}$	her mother's sib-friend: *mundū-mumáiñ*

(b) In the same generation

(α) Within the gens

μ_1—μ_2 / M_1—M_2 } and *vice versa*, his sib-friend: *mundū*

φ_1—φ_2 / W_1—W_2 } and *vice versa*, her sib-friend: *mu-náma*

M_1—W_2	his sib-friend's wife: *mundū-mumáia* or *mundū-miniák*	W_2—M_1	her husband's sib-friend or her female sib-friend's husband: *mundū-mumóna* or *mamánu-mumóna*

(m_1)—(m_2) the boys of the two sibs, when initiated together, his initiation chum: *m-āmbo* (they become *mundū* after marriage)

(w_1)—(w_2) the girls of the two sibs, when initiated together, her initiation chum: *m-áma* (they become *mu-náma* after marriage)

(β) With the gens connected by marriage

M_{A1}—$W_{(A2 \to) B2}$	his sib-friend's married sister: *magendó-muma*	$W_{(A2 \to) B2}$—M_{A1}	her brother's married sib-friend: *mundūmu-kúdi*
M_{A1}—M_{B2}	elder (firstborn) to younger brother-in-law's sib-friend: *mundū-matáiñi*		
M_{B2}—M_{A1}	younger to elder (firstborn) brother-in-law's sib-friend: *mundū-muḏo*		

$W_{(B1 \to) A1}$—$W_{(A2 \to) B2}$ and *vice versa*, the sister of her husband's sib-friend or her sister-in-law's (female) sib-friend: *mundu-meiáma*

(c) Between different younger generations

M_2—$(m_1)_{1 \text{ or } 3}$	his sib-friend's [step]son: *mundū-[mòro]-memɛ̀aṅ*	$(m_1)_{1 \text{ or } 3}$—M_2	his [step]father's sib-friend: *mundū-munáta*
W_2—$(m_1)_{1 \text{ or } 3}$	her husband's male sib-friend's [step] son = her female sib-friend's [goblin] son: *mu-móna*	$(m_1)_{1 \text{ or } 3}$—W_2	his [step]father's sib-friend's wife = his mother's female sib-friend: *munámu-mumáia*
M_2—$(w_1)_2$	his sib-friend's daughter: *mundū-mumáia*	$(w_1)_2$—M_2	her father's sib-friend: *munàmu-mumónoṅab*
W_2—$(w_1)_2$	her female sib-friend's daughter: *mundū-maùik*	$(w_1)_2$—W_2	her mother's female sib-friend: *munàmu-mumáia*

4. RELATIONS BETWEEN PARENTS AND CHILDREN

(a) General

M—m	his son: *me-mɛ̀aṅ*	m—M	his father: *mi-ṅiɔ́* (voc. *miɔ́* or *ámi*[1])
W—m	her son: *me-mɛ̀aṅ*	m—W	his mother: *mu-máia* or *mu-ṅáia* (voc. *ami*)
M—w	his daughter: *ma-iúk*	w—M	her father: *mi-ṅiɔ́* (voc. *ami*[1])
W—w	her daughter: *ma-iúk*	w—W	her mother: *mu-máia* (voc. *ami*) or *mu-naia*

(b) The goblin child's relations

μ_2—$(m_1)_1$	his own goblin-son: *mu-ndūoṅab*	$(m_1)_1$—μ_2	his own goblin-father: *mòro-miṅiɔ́* or *mitjóiṅ*
W_1—$(m_1)_1$	her (goblin-)son: *mòro-me-mɛ̀aṅ*	$(m_1)_1$—W_1	his mother: *mu-máia*
μ_1—$(w_2)_1$	his own goblin-daughter: *mu-máioṅab*	$(w_2)_1$—μ_1	her own goblin-father: *mu-mónoṅab*
W_2—$(w_2)_1$	her (goblin-)daughter: *mòro-maiúk*	$(w_2)_1$—W_2	her mother: *mu-máia*

[1] *ami* is used exclusively by small children, but for father as well as for mother.

M_1—$(m_1)_1$	his stepson: *moro-memɛ̱aṅ* (or *aia mɛ̱aṅ* [1])	$(m_1)_1$—M_1	his stepfather: *mun-áta* (or *ma-miniδ* [2])
M_2—$(w_2)_1$	his stepdaughter: *mòro-maiúk*	$(w_2)_1$—M_2	her stepfather: *mun-áta*
φ_2—$(m_1)_1$	her husband's own goblin-son: *mu-mónoñab*	$(m_1)_1$—φ_2	his own goblin-father's wife: *mu-máia*
φ_1—$(w_2)_1$	her husband's own goblin-daughter *mu-mámoñab*	$(w_2)_1$—φ_1	her own goblin-father's wife *mu-mámoñab*

(c) The other children

If a child takes its origin from the *mundū* of the same generation as the mother, its father being the husband's sib-friend, *i. e.* the son of the woman's goblin-initiator:

M_2—$(m_1)_3$	his own son by his sib-friend's wife *mundū-memɛ̱aṅ*	$(m_1)_3$—M_2	his natural father = his mother's husband's sib-friend: *mun-áta*
M_2—$(w_1)_{2 \text{ or } 4}$	his own daughter by his sib-friend's wife: *mundū-maiúk*	$(w_1)_{2 \text{ or } 4}$—M_2	her natural father = her mother's husband's sib-friend: *mun-áta*
W_2—$(m_1)_3$	her husband's son by his sib-friend's wife: *munama-memɛ̱aṅ* (voc. *muná-meaṅ*)	$(m_1)_3$—W_2	his natural father's wife = (his mother's husband's sib-friend's wife): *munàmu-muñáia*
W_2—$(w_1)_{2 \text{ or } 4}$	her husband's daughter by his sib-friend's wife: *munàma-maiúk* (voc. *muná-maiuk*)	$(w_1)_{2 \text{ or } 4}$—W_2	her natural father's wife: (her mother's husband's sib-friend's wife): *munàmu-muñáia*

(d) In case the man has two wives.[3]

IW—$(m)^{II}$	her younger co-wife's son: *namre-mɛ̱aṅ* (voc.)	$(m)^{II}$—IW	his mother's elder co-wife: *mu-máia*
IW—$(w)^{II}$	her younger co-wife's daughter: *namre-iuk* (voc.)	$(w)^{II}$—IW	her mother's elder co-wife: *mu-máia*
IIW—$(m)^{I}$	her elder co-wife's son: *na-mean* (voc.)	$(m)^{I}$—IIW	his mother's younger co-wife: *m-ámi*
IIW—$(w)^{I}$	her elder co-wife's daughter: *na-iuk* (voc.)	$(w)^{I}$—IIW	her mother's younger co-wife: *m-ámi*

[1] "old son."

[2] "other father."

[3] IW means, first wife; $II\ W$, second wife; $(m)^{I}$, son by the first wife; $(w)^{II}$, daughter by the second wife.

5. RELATIONS BETWEEN FURTHER ASCENDANTS AND DESCENDANTS

(a) On the mother's side

(α) *On changing the gens*

μ_A—$(m_B)_{1 \text{ or } 3}$	his daughter's son = grandson: *mo-úmaṅ*	$(m_B)_{1 \text{ or } 3}$—μ_A	his mother's father = his grandfather: *ma-rū̄* (*rū̄oṅab*) or *m-itjóiṅ*
φ_A—$(m_B)_{1 \text{ or } 3}$	her daughter's son = grandson: *mo-úmaṅ*	$(m_B)_{1 \text{ or } 3}$—φ_A	his mother's mother = his grandmother: *ma-ámo*
μ_A—$(w_B)_{2 \text{ or } 4}$	his daughter's daughter = granddaughter: *mo-ùma-menígen*	$(w_B)_{2 \text{ or } 4}$—μ_A	her mother's father = her grandfather: *ma-rū̄* (*rū̄oṅab*) or [1] *m-itjóiṅ*
φ_A—$(w_B)_{2 \text{ or } 4}$	her daughter's daughter = granddaughter: *mo-ùma-menági*	$(w_B)_{2 \text{ or } 4}$—φ_A	her mother's mother = her grandmother *ma-ámo*

The same terms are also employed with reference to the ordinary children.

In the *complication* with the other sib *mundū* is used as *preposition* to the term indicating the gens relation, as:

$\varphi_{(B1 \to) A1}$—$(m_{B2})_{1 \text{ or } 3}$ her (female) sib-friend's daughter's son (grandson): *mundū mo-uma menígen.*

(b) On the father's side (within the sib)

(α) *The goblin child*

μ—$(m)_1$	his son's stepson: *mundůoṅab* or *m-āndu*	$(m)_1$—μ	his stepfather's father: *m-āndu* or *mundůoṅab*
φ—$(m)_1$	her son's stepson: *mu-mónoṅab* or *mu-móna*	$(m)_1$—φ	his stepfather's mother: *mu-máionab* or *mu-máia*
μ—$(w)_1$	his son's stepdaughter: *mu-máia* or *mu-máioṅab*	$(w)_1$—μ	her stepfather's father: *mu-móna* or *mu-mónonab*
φ—$(w)_1$	her son's stepdaughter: *m-áma* or *má-moṅab*	$(w)_1$—φ	her stepfather's mother: *ma-moṅab* or *m-áma*

[1] If the first child is a female, the mother's father is called *rū̄* or *rū̄oṅab* instead of *itjóin'*.

(β) *The ordinary children*

μ—$(m)_{2\ \text{etc.}}$	his son's son: *mo-úmaṅ*
μ—$(w)_{2\ \text{etc.}}$	his son's daughter: *mu-máioṅab*
φ—$(m)_{2\ \text{etc.}}$	her son's son: *mu-mónoṅab*
φ—$(w)_{2\ \text{etc.}}$	her son's daughter: *mu-ménage* (*mo-ùmaṅ-ménage*)

(c) In case the man has two wives [1]

$I\mu$—$(m)^{II}$	his daughter's younger co-wife's son: *mo-úman*
$I\mu$—$(w)^{II}$	his daughter's younger co-wife's daughter: *mo-ùma-menígen*
$I\varphi$—$(m)^{II}$	her daughter's younger co-wife's son: *mo-úman*
$I\varphi$—$(w)^{II}$	her daughter's younger co-wife's daughter: *mo-ùma-menági*
$II\mu$—$(m)^{I}$	his daughter's elder co-wife's son: *mu-kûdoṅab*
$II\mu$—$(w)^{I}$	his daughter's elder co-wife's daughter: *iukróinoṅab*
$II\varphi$—$(m)^{I}$	her daughter's elder co-wife's son: *mu-kûdoṅab*
$II\varphi$—$(w)^{I}$	her daughter's elder co-wife's daughter: *iukróinoṅab*

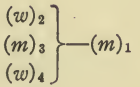
$(m)_{2\ \text{etc.}}$—μ	his father's father: *m-iljóiṅ*
$(w)_{2\ \text{etc.}}$—μ	her father's father: *mu-móna* or *mónoṅab*
$(m)_{2\ \text{etc.}}$—φ	his father's mother: *mu-máioṅab*
$(w)_{2\ \text{etc.}}$—φ	her father's mother: *mu-máiṅ*
$(m)^{II}$—$I\mu$	his mother's elder co-wife's father: *ma-rīī*
$(w)^{II}$—$I\mu$	her mother's elder co-wife's father: *ma-rīī*
$(m)^{II}$—$I\varphi$	his mother's elder co-wife's mother: *ma-ámo*
$(w)^{II}$—$I\varphi$	her mother's elder co-wife's mother: *ma-ámo*
$(m)^{I}$—$II\mu$	his mother's younger co-wife's father: *mu-kûdi*
$(w)^{I}$—$II\mu$	her mother's younger co-wife's father: *mu-kûdi*
$(m)^{I}$—$II\varphi$	his mother's younger co-wife's mother: *kūdi-mu-máia*
$(w)^{I}$—$II\varphi$	her mother's younger co-wife's mother: *kūdi-mu-máia*

[1] $I\mu$ designates the elder wife's father, $(m)^{II}$ the younger wife's son.

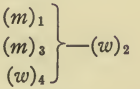
6. RELATIONS BETWEEN BROTHERS, SISTERS, AND COUSINS

(a) Brothers and sisters are mutually denominated according to the succession of births.

(α) *In case a son is the firstborn*



his or her firstborn half-brother (the goblin-child); *ma-rű̀gemuin*

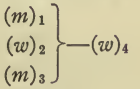


his or her eldest sister of the matrimonial children: *ma-ài-menígen* or *ma-ài(a)-menági*

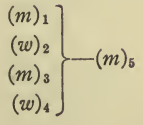
$(m)_1$—$(m)_3$ his younger brother: *me-néin*

$(w)_2$—$(m)_3$ her younger brother: *me-néin*

$(w)_4$—$(m)_3$ her elder brother: *ma-áia*

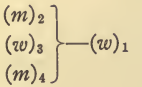


his or her youngest sister: *me-nèin-menìgen* (*menàgi*) *mitjóṅ* or *menágendo*

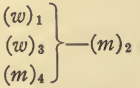


his or her lastborn brother: *eṅúnumuin*

(β) *In case a daughter is the firstborn*



his or her firstborn half-sister (the goblin-child): *mu-màṅamaṅ*

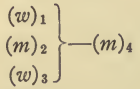


his or her eldest brother of the matrimonial children: *ma-áia*

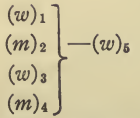
$(w)_1$—$(w)_3$ her younger sister: *me-nèin menígen*

$(m)_2$—$(w)_3$ his younger sister: *me-nèin-menígen*

$(m)_4$—$(w)_3$ his elder sister: *ma-ài-menígen*



his or her youngest brother: *me-nèin mitjóṅ*

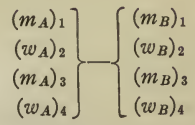


his or her lastborn sister: *eṅúnumuin menígen* or (*menági*)

(b) In case the man has two wives brothers and sisters designate each other as cousins. For the relations of brothers and sisters after marriage—see 2 (d).

(c) Cousins denominate each other according to the relative ages of their respective parents.

(α) The cousins of the elder parents, *i. e.*, of the elder brother in the exchange marriage to the younger cousins: *me-tiáṅa*

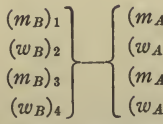


male or female to male: *me-néin*

male to female: *me-nèin menígen*

female to female: *me-nèin menági*

(β) The cousins of the younger mother to the elder cousins: *ma-áitji*



male or female to male: *ma-áia*

male to female: *ma-àia menigen*

female to female: *ma-àia menági*

(d) The sib cousins $(m_1)_1$—$(w_2)_1$ and $(w_1)_2$—$(m_2)_2$, etc., denominate each other in the same manner.

(a) Terms used reciprocally in connection with the exchange marriage

M_{A1}—$(m_{B1})_{1 \text{ or } 3}$	His sister's son (his nephew): *mu-màgendoṅ-e-mɇaṅ*	$(m_{B1})_{1 \text{ or } 3}$—$M_{A1}$	his mother's brother (his uncle): *mu-ápi*
M_{A1}—$(w_{B1})_2$ M_{A2}—$(w_{B2})_1$	his sister's daughter (his niece): *mu-màgendon-ma-iúk*	$(w_{B1})_2$—M_{A1} $(w_{B1})_1$—M_{A2}	her mother's brother (her uncle): *mu-kúdi*
$W_{(B1 \to)A1}$—$(m_{B1})_1$	her husband's exchanged sister's sister's first son = her brother's stepson: *mu-kúdi*	$(m_{B1})_1$—$W_{(B1 \to)A1}$	his mother's brother's wife = his stepfather's sister: *mu-mágendoṅ*
$W_{(B2 \to)A2}$—$(w_{B2})_1$	her husband's sister's first daughter = her brother's stepdaughter: *mu-mágendoṅ* or *mandóṅ*	$(w_{B2})_1$—$W_{(B2 \to)A2}$	her mother's brother's wife = her stepfather's sister: *mu-mágendoṅ*
$W_{(B1 \to)A1}$—$(m_{B1})_3$	her husband's sister's son = her brother's son: *me-mɇaṅ*	$(m_{B1})_3$—$W_{(B1 \to)A1}$	his mother's brother's wife = his father's sister: *mu-máṅa*
$W_{(B1 \to)A1}$—$(w_{B1})_2$	her husband's sister's daughter = her brother's daughter: *ma-iúk*	$(w_{B1})_2$—$W_{(B1 \to)A1}$	her mother's brother's wife = her father's sister: *mu-máṅa*

(b) On the father's side

(1) *Father's brother*

$M_{A1/b}$—$(m_{A1})_3$ $M_{A1/b}$—$(m_{A1})_1$	(α) his brother's son: *me-mɇaṅ* (β) his elder stepbrother's son: *àia-mɇaṅ* (γ) his younger stepbrother's son: *me-èin-mɇaṅ*	$(m_{A1})_3$—$M_{A1/b}$ $(m_{A1})_1$—$M_{A1/b}$	(α) his father's brother: *mi-ñiŏ* (β) his father's stepbrother or his stepfather's brother: *mun-áta*
$M_{A1/b}$—$(w_{A1})_2$ $M_{A2/b}$—$(w_{A2})_1$	(α) his brother's daughter: *ma-iúk* (β) his elder stepbrother's daughter: *àia-maiúk* or *ma-àia-iúk* (γ) his younger stepbrother's daughter: *me-èin-iúk*	$(w_{A1})_2$—$M_{A1/b}$ $(w_{A2})_1$—$M_{A2/b}$	(α) her father's brother: *mi-ñiŏ* (β) her father's stepbrother: *mun-áta*
$W_{(C1 \to)A1/b}$—$(m_{A1})_1$	(α) her husband's brother's son: *me-mɇaṅ* (β) and (γ) same terms as used by her husband: (see above under $M_{A1/b}$)	$(m_{A1})_1$—$w_{(C1 \to)A1/b}$	(α) his father's brother's wife: *mu-máia* (β) his father's stepbrother's wife: *mu-máṅa*

$W_{(C1 \to)A1/b}$—$(w_{A1})_2$ { (α) her husband's brother's daughter: *ma-iúk*; (β) and (γ) same terms as used by her husband (see above under $M_{A1/b}$)

2. *Father's sister*

$W_{(A1/c \to)D1}$—{ $(m_{A1})_3$, $(m_{A1})_1$ } { (α) her (not exchanged) brother's son: *me-m̨aṅ*; (β) her elder stepbrother's son: *àia-m̨aṅ* or *ma-àia-m̨aṅ*; (γ) her younger stepbrother's son: *me-èin-m̨aṅ*

$W_{(A1/c \to)D1}$—$(w_{A1})_2$, $W_{(A2/c \to)D2}$—$(w_{A2})_1$ { (α) her (not exchanged) brother's daughter: *ma-iúk*; (β) her elder stepbrother's daughter: *àia-maiúk* or *mà-aia-iúk*; (γ) her younger stepbrother's daughter: *mè-ein-iúk*

M_{D1}—$(m_{A1})_3$ his wife's brother's son: *me-m̨aṅ*

M_{D1}—$(w_{A1})_2$ his wife's brother's daughter: *ma-iúk*

(c) On the mother's side

1. *Mother's brother*

$M_{B1/b}$—{ $(m_{A1})_3$, $(m_{A1})_1$ } { (α) his sister's son: *iùkroin me-m̨aṅ* or *me-iùkroin-m̨aṅ*; (β) his elder stepsister's son: *àia-memaṅ* or *ma-àia-m̨an*; (γ) his younger stepsister's son: *me-ein-m̨aṅ*

$(w_{A1})_2$—$W_{(C1 \to)A1/b}$ { (α) her father's brother's wife: *mu-máia*; (β) her father's stepbrother's wife: *mu-máṅa*

$(m_{A1})_3$, $(m_{A1})_1$ } $W_{(A1/c \to)D1}$ { (α) his father's (not exchanged) sister: *mu-máia*; (β) his father's stepsister: *mu-máṅa*

$(w_{A1})_2$—$W_{(A1/c \to)D1}$, $(w_{A2})_1$—$W_{(A2/2 \to)D2}$ { (α) her father's (not exchanged) sister: *mu-máia*; (β) her father's stepsister: *mu-máṅa*

$(m_{A1})_3$—M_{D1} his father's sister's husband: (α) *mi-ṅiǫ̣* (β) *mun-áta*

$(w_{A1})_2$—M_{D1} her father's sister's husband: (α) *mi-ṅiǫ̣* (β) *mun-áta*

$(m_{A1})_3$, $(m_{A1})_1$ }—$M_{B1/b}$ { (α) his mother's brother: *mu-ápi*; (β) his mother's stepbrother: *mu-ápi*

$M_{B1/b}$—$(w_{A1})_2$
$M_{B2/b}$—$(w_{A2})_1$

- (α) his (not exchanged) sister's daughter: *iùkroin-ma-iúk* or *me-iúkroin-iúk*
- (β) his elder stepsister's daughter: *àia-maiúk* or *ma-àia-iúk*
- (γ) his younger stepsister's daughter: *me-ein-iúk*

$W_{(D1 \to)B1/b}$—$(m_{A1})_1$ her husband's (not exchanged) sister's goblin-son: *mu-kúdi*

$W_{(D1 \to)B1/b}$—$(m_{A1})_3$ her husband's sister's other son: *me-mẹ̀an*

$W_{(D2 \to)B2/b}$—$(w_{A2})_1$ her husband's sister's goblin-daughter: *mu-mágendoṅ*

$W_{(D2 \to)B2/b}$—$(w_{A2})_3$ her husband's sister's other daughter: *ma-iúk*

2. *Mother's sister*

$W_{(B1/c \to)C1}$—$\{(m_{A1})_3, (m_{A1})_1\}$

- (α) her sister's son: *me-mẹ̀aṅ-munàgi*
- (β) her elder stepsister's son: *àia-me-mẹ̀aṅ* or *ma-àia-mẹ̀aṅ* (*-munági*)
- (γ) her younger stepsister's son: *me-ein-mẹ̀aṅ* (*-munági*)

$(w_{A1})_2$—$M_{B1/b}$
$(w_{A2})_1$—$M_{B2/b}$

- (α) her mother's brother: *mu-kúdi*
- (β) her mother's stepbrother: *mu-kúdi*

$(m_{A1})_1$—$W_{(D1 \to)B1/b}$

- (α) his (the goblin-son's) mother's brother's wife: *mu-mágendoṅ*
- (β) his mother's stepbrother's wife: *mu-mágendoṅ*

$(m_{A1})_3$—$W_{(D1 \to)B1/b}$ his mother's brother's wife: *mu-máṅa*

$(w_{A2})_1$—$W_{(D2 \to)B2/b}$

- (α) her (the goblin-daughter's) mother's brother's wife: *mu-mágendoṅ*
- (β) her mother's stepbrother's wife: *mu-mágendoṅ*

$(w_{A2})_3$—$W_{(D2 \to)B2/b}$ her mother's brother's wife: *mu-náṅa*

$\{(m_{A1})_3, (m_{A1})_1\}$—$W_{(B1/c \to)C1}$

- (α) his mother's sister: *mu-máia*
- (β) his mother's stepsister: *mu-máṅa menigen*

$W_{(B1/c \to)C1}$—$(w_{A1})_2$ $W_{(B2/c \to)C2}$—$(w_{A2})_1$	(α) her sister's daughter: *ma-iúk-munági* (β) her elder stepsister's daughter: *àia-maiúk* or *ma-àia-iúk* (*-munagi*) (γ) her younger stepsister's daughter: *me-ein-iúk* (*-munagi*)	$(w_{A1})_2$—$W_{(B1/c \to)C1}$ $(w_{A2})_1$—$W_{(B2/c \to)C2}$	(α) her mother's sister: *mu-máia* (β) her mother's stepsister: *mu-máña-menagi*
M_{C1}—$(m_{A1})_3$	his wife's sister's son: *me-mɬaň-menígen*	$(m_{A1})_3$—M_{C1}	his mother's sister's husband (α) *mi-ñiŏ* (β) *mu-nata*
M_{C1}—$(w_{A1})_2$	his wife's sister's daughter: *ma-iuk-menígen*	$(w_{A1})_2$—M_{C1}	her mother's sister's husband (α) *mi-ñiŏ* (β) *mu-nata*

(d) Relations with the other sib

Relations with the other sib are characterized by the prefixation of *mundū* before the terms designating males, and of *mámaň* to the terms referring to females. The following terms may exemplify this. If it is commonly known that the person addressed stands in the relation of *mundū*, the distinctive determination is omitted.

(α) *Same generation as the mother*

M_{A2}—(m_{B1})	the son of his male sib-friend's sister: *mundū-màgendoň-memɬaň*	$(m_{B1})_1$—M_{A2}	the sib-friend of his mother's brother: *mundū-ma-ápi*
$W_{(B2 \to)A2}$—$(m_{B1})_1$	the son of her male sib-friend's sister: *mundū-memɬaň*	$(m_{B1})_1$—$W_{(B2 \to)A2}$	the sib-friend's wife of his mother's brother: *mundū-mámaň*
M_{A2}—$(w_{B1})_2$	the daughter of his sib-friend's sister: *mundū-mágendoň-maiúk*	$(w_{B1})_2$—M_{A2}	the sib-friend of her mother's brother: *mundū-mukúdi*
$W_{(B2 \to)A2}$—$(w_{B1})_2$	the daughter of her brother's sib-friend: *mundū-maiúk*	$(w_{B1})_2$—$W_{(B2 \to)A2}$	the (female) sib-friend of her father's sister: *mundū-mámaň*

(β) *Older generation than the mother's*

μ_{A1}—$(m_{B2})_1$	his sib-friend's daughter's son: (sib-grandson on daughter's side): *mundū-mo-úma(ň)*	$(m_{B2})_1$—μ_{A1}	his mother's father's sib-friend (sib-grandfather on mother's side): *mundū-m-rū̄*

μ_{A1}—$(w_{B2})_2$	his sib-friend's daughter's daughter (sib granddaughter on daughter's side) *mundū-mo-ùma-menígen*	$(w_{B2})_2$—μ_{A1}	her mother's father's sib-friend (sib grandfather on mother's side): *mundū-m-rū̄*
$\varphi_{(B1 \to) A1}$—$(m_{B2})_1$	her husband's sib-friend's daughter's son (sib grandson on daughter's side): *mundū-mo-úma(ṅ)*	$(m_{B2})_1$—$\varphi_{(B1 \to) A1}$	his mother's father's sib-friend's wife (sib grandmother on mother's side): *mundū-ma-ámo*
$\varphi_{(B1 \to) A1}$—$(w_{B2})_2$	her husband's sib-friend's daughter's daughter (sib granddaughter on daughter's side): *mundū-mo-ùma-menígen*	$(w_{B2})_2$—$\varphi_{(B1 \to) A1}$	her mother's father's sib-friend's wife (sib grandmother on mother's side): *mundū-ma-ámo*

8. COLLECTIVE RELATIONS[1]

ΣM_1	all men of the left sib: *a-bòne-vûeka*	ΣM_2	all men of the right sib: *a-tàn-e-vûeka*
ΣW_1	all women of the left sib: *a-bòn-miniák*	ΣW_2	all women of the right sib: *a-tàn-miniák*
$\Sigma(m_1)$	all boys of the left sib: *a-bòn-mɇaṅ*	$\Sigma(m_2)$	all boys of the right sib: *a-tàn-mɇaṅ*
$\Sigma(w_1)$	all girls of the left sib: *a-bòn-menígen*	$\Sigma(w_2)$	all girls of the right sib: *a-tàn-menígen*

$\Sigma M_1 \times \Sigma M_2$	and *vice versa*, the sib-friends in addressing each other: *mundûdi*
$\Sigma W_1 \times \Sigma W_2$	and *vice versa*, the female sib-friends to each other: *munámuli*
ΣW_1—ΣM_2	the women of one sib to their male sib-friends: *muvûekeli*
ΣM_1—ΣW_2	the men of one sib to their female sib-friends: *miniákeli*
$\Sigma(mw)_A$—$\Sigma(mw)_B$	the elder cousins (according to the relative age of their parents), to the younger cousins of the other gens: *aítji*
$\Sigma(mw)_B$—$\Sigma(mw)_A$	the younger cousins to the elder cousins of the other gens; the males: *nadia-mɇaṅ-manáki*; the females: *menèg-miáṅa*

[1] ΣM indicates the sum of all men, ΣW the sum of all women, etc.

TABLE II

Survey of the Terms of Relationship

GENERAL TERMS

(a) Male

me-mẹ̀aṅ son

his or her son M or W—m

his brother's son $M_{A1/b}$—$(m_{A1})_1$

her brother's son = her husband's sister's son $W_{(B1 \to)1}$—$(m_{B1})_3$

her (not exchanged) brother's son $W_{A1/b}$—$(m_{A1})_3$

his wife's brother's son M_{D1}—$(m_{A1})_3$

her husband's brother's son $W_{(C1 \to)A1/b}$—$(m_{A1})_1$

iùkroin me-mẹ̀aṅ or *me-iùkroin-mẹ̀aṅ* his sister's son $M_{B1/b}$—$(m_{A1})_{1 \text{ or } 3}$

màgendoṅ-e-mẹ̀aṅ his (in exchange) married sister's son M_{A1}—$(m_{B1})_1$

me-mẹ̀aṅ munági her sister's son $W_{B1/c}$—$(m_{A1})_3$

her husband's sister's other son $W_{(D1 \to)B1/b}$—$(m_{A1})_3$

me-mẹ̀aṅ menígen his wife's sister's son M_{C1}—$(m_{A1})_3$

me-èin-mẹ̀aṅ his or her younger stepbrother's son $M_{A1/b}$—$(m_{A1})_1$ or $W_{(A1/c \to)D1}$—$(m_{A1})_3$

his or her younger stepsister's son $M_{B1/b}$—$(m_{A1})_1$ or $W_{(B1/c \to)C1}$—$(m_{A1})_3$

ma-àia-mẹ̀aṅ or *àia-me-mẹ̀aṅ* his or her elder stepbrother's son $M_{A1/b}$—$(m_{A1})_1$ or $W_{(A1/b \to)D1}$—$(m_{A1})_3$

his or her elder stepsister's son $M_{B1/b}$—$(m_{A1})_1$ or $W_{(B1/c \to)C1}$—$(m_{A1})_3$

námre mẹ̀aṅ her younger co-wife's son IW—$(m)^{II}$

ná-mẹ̀aṅ her elder co-wife's son IIW—$(m)^{I}$

mòro-memẹ̀aṅ her goblin son W_1—$(m_1)_1$

his stepson M_1—$(m_1)_1$ [also *mundȕoṅab*]

munàma me-mẹ̀aṅ (*muná-mẹ̀aṅ*) the husband of the woman whom her own husband initiated = her husband's sib-friend's son φ_1—M_2 or φ_2—M_1

her husband's son by his sib-friend's wife W_2—$(m_1)_3$

mundȕ-memẹ̀aṅ the son of her (male) sib-friend's sister $W_{(B2 \to)A2}$—$(m_{B1})_1$

his sib-friend's sons—the initiated woman's husband μ_1—M_2 or μ_2—M_1

his own son by his sib-friend's wife M_2—$(m_1)_3$

mundū màgendoṅ me-mɨ̨aṅ the son of his sib-friend's sister M_{A2}—$(m_{B1})_1$

mundū mòro me-mɨ̨aṅ his sib-friend's stepson M_2—$(m_1)_1$

mi-ṅiō (voc.: *miō* or *ṅniɨ̨o* and *ámi*) father

his or her father m—M or w—M

his father's brother $(m_{A1})_1$—$M_{A1/b}$

his or her father's sister's husband $(m_{A1})_3$—M_{D1} or $(w_{A1})_2$—M_{D1}

his or her mother's sister's husband $(m_{A1})_3$—M_{C1} or $(w_{A1})_2$—M_{C1}

mòro-miṅiō or *mitjóiṅ* his own goblin father $(m_1)_1$—μ_2

ṅiōṅiō(?) his wife's father M_B—μ_A (cf. *mu-táta*)

mu-móna (voc.: *mom*) husband

her husband W—M

her stepfather's father $(w_{A2})_1$—μ_{A2}

her husband's (male) sib-friend's stepson = her (female) sib friend's goblin-son W_2—$(m_1)_1$

mumónoṅab (also: *mumóna*) her goblin-father $(w_2)_1$—μ_1

her husband's own goblin-son φ_2—$(m_1)_1$

her son's stepson φ_{A1}—$(m_{A1})_1$

her son's son φ_1—$(m_1)_3$

her father's father $(w_1)_2$—μ_1

mundū mumóna or *mamànu mumóna* her husband's sib-friend or her sib-friend's husband W_2—M or W_1—M_2

mu-ndū sib-friend

his sib-friend $\mu_1 \times \mu_2$ or $M_1 \times M_2$

mundɨ̨oṅab his own goblin-son μ_2—$(m_1)_1$

m-āndu voc.: *āndu*) (or *mundɨ̨oṅab*)

his stepfather's father $(m_1)_1$—μ_{A1}

his son's stepson μ_{A1}—$(m_{A1})_1$

his stepfather's goblin-father $(m_1)_3$—μ_2

his stepsister's goblin-father $(m_2)_2$—μ_1

his step-relation

(?) younger to elder parents-in-law (if no exchange marriage) μ_{A1}—$\varphi_{(C1 \to) B1}$

For the following compound terms see reference under the last part of the compound.

mundū me-mɨ̨aṅ
mundū-mòro me-mɨ̨aṅ
mundū-màgendoṅ me-mɨ̨aṅ
mundū ma-iúk
mundū màgendoṅ ma-iúk
mundū mamáṅ
mundū mumóna or *mamámu mumóna*

mundū mumáia or *mundū miniák*
mundū-ma-ápi
mundū-mu-o̱o
mundū matáiñi
mundū maiáma
mundū mumáiñ
mundū mo-úmañ
mundū mo-ùma menígen
mundū mitjóñab
mundū mumûeka
mundū menígink
mundū munáta
mundū máru
mundū mukúdi

(b) Female.

mu-máia or *mu-ñáia* (voc.: *ámi*) mother-wife

his wife M—W

his or her mother m—W or w—W

his or her mother's sister $(m_{A1})_3$ or $(w_{A1})_2$—$W_{A1/b}$

his or her mother's elder co-wife $(m)^{II}$ or $(w)^{II}$—IW

his or her father's brother's wife $(m_{A1})_1$ or $(w_{A1})_2$—$M_{A1/b}$

his own goblin-father's wife $(m_1)_1$—φ_2

his or her father's (not exchanged) sister $(m_{A1})_3$ or $(w_{A1})_2$—$W_{A1/c}$

his son's stepdaughter μ_{A2}—$(w_{A2})_1$

mu-máioñab (also *mu-máia*) his own goblin-daughter μ_1—$(w_2)_1$

his stepfather's mother $(m_{A1})_1$—φ_{A1}

his son's daughter μ_1—$(w_1)_2$

his father's mother $(m_1)_3$—φ_1

mu-màia ā̃p his first wife M—IW

mu-màia engóm his second wife M—IIW

kùdi mu-máia his or her mother's younger co-wife's mother $(m)^{I}$ or $(w)^{I}$—IIφ

mundū-mu-máia or *mundū miniák* his sib-friend's wife M_1—W_2 or M_2—W_1

his father's sib-friend's wife = the wife of his wife's goblin-initiator M_1—φ_2 or M_2—φ_1

munàmu mu-ñáia his or her mother's husband's sib-friend's wife = his or her natural father's wife $(m_1)_3$—W_2 or $(w_1)_{2 \text{ or } 4}$—W_2

his stepfather's sib-friend's wife = his mother's (female) sib-friend $(m_1)_1$—W_2

ma-iúk daughter

his or her daughter M—w or W—w

his or her brother's daughter $M_{A1/b}$—$(w_{A1})_2$ or $W_{(A1/b \to)D1}$—$(w_{A1})_2$ or $W_{(B1 \to)A1}$—$(w_{B1})_2$

his or her sister's daughter M_{A1}—$(w_{B1})_2$ or M_{A2}—$(w_{B2})_1$

his wife's brother's daughter M_{D1}—$(w_{A1})_2$

her husband's brother's daughter $W_{(C1 \to)A1/b}$—$(m_{A1})_1$

her (not exchanged) brother's daughter $W_{A1/c}$—$(w_{A1})_2$

her husband's sister's other daughter $W_{(D2 \to)B2/b}$—$(w_{A2})_3$

iukróin his married sister—not given in exchange for himself M_{A1}—$W_{(A1/c \to)C1}$

her married sister $W_{A1/d}$—$W_{(A1/c \to)C1}$

iukróinoñab his or her daughter's elder co-wife's daughter $II\mu$ or $II\varphi$—$(w)^{I}$

the married to the unmarried sister $W_{(A/c \to)C}$—$W_{A/d}$

iukròin ma-iúk or *me-iùkroin-iúk* his (not exchanged) sister's daughter $M_{B1/b}$—$(w_{A1})_2$

màgendoñ maiúk his married (in exchange for himself) sister's first or other daughter M_{A1}—$(w_{B1})_2$ or M_{A2}—$(w_{B2})_1$

maiùk menígen his wife's sister's daughter M_{C1}—$(w_{A1})_2$

maiùk menági her sister's daughter $W_{(B1/c \to)C1}$—$(w_{A1})_2$

me-èin-iúk his younger stepbrother's daughter $M_{A1/b}$—$(w_{A1})_2$

her younger stepbrother's daughter $W_{(A1/c \to)D1}$—$(w_{A1})_2$

his younger stepsister's daughter $M_{B1/b}$—$(w_{A1})_2$

her younger stepsister's daughter (*-munàgi*) $W_{(B1/c \to)D1}$—$(w_{A1})_2$

ma-áia-iùk or *áia-ma-iùk* his elder stepbrother's daughter; $M_{A1/b}$—$(w_{A1})_2$

her elder stepbrother's daughter $W_{(A1/c \to)D1}$—$(w_{A1})_2$

his elder stepsister's daughter $M_{B1/b}$—$(w_{A1})_2$

her elder stepsister's daughter (*-munàgi*) $W_{(B1/c \to)C1}$—$(w_{A1})_2$

námre iùk her younger co-wife's daughter IW—$(w)^{II}$

ná-iuk her elder co-wife's daughter IIW—$(w)^{I}$

màro-ma-iúk her goblin-daughter W_2—$(w_2)_1$

his stepdaughter M_2—$(w_2)_1$

munà-ma-iúk her husband's daughter by his sib-friend's wife W_2—$(w_1)_{2 \text{ or } 4}$

her brother's sib-friend's daughter $W_{(B2 \to)A2}$—$(w_{B1})_2$

mundū màgendoñ maiúk his sib-friend's sister's daughter M_{A2}—$(w_{B1})_2$

maiùk mumûek his son-in-law's sister μ_A—$W_{B/c}$

mu-náma
female sib-friend

her female sib-friend $W_1 \times W_2$ or $\varphi_1 \times \varphi_2$

the two wives of one husband, to each other $IW \times IIW$

the mothers-in-law, to each other, (if they come from a gens different from that which her daughter enters by marriage) $\varphi_{(C1 \to)B1} \times \varphi_{(D1 \to)A1}$ (*cf. ńáiepui*)

mu-námoṅab her husband's own goblin-daughter φ_1—$(w_2)_1$
her own goblin-father's wife $(w_2)_1$—φ_1
her stepfather's mother $(w_{A2})_1$—φ_{A2}
her son's stepdaughter φ_{A2}—$(w_{A2})_1$

For the following compound terms see reference under the second part of the compound.

mu-nàmu mu-ñáia
mu-nàmu mungóm
munàma memɬaṅ or *muná-mɬaṅ*
munà-ma-iúk
mamánu mu-mòna or *mundū mumóna*

(a) Male

mu-ñaiepui (voc. *maiepui*) parents-in-law
his child's father-in-law and *vice versa* (within the generation of the parents) $\mu_A \times \mu_B$
muñaiepui menági, cf. menági

mu-o̱o firstborn brother-in-law
his elder (firstborn) brother-in-law M_B—M_A
his elder brother's elder (firstborn) brother-in-law $M_{B/b}$—M_A
mundū-mu-o̱o younger to elder (firstborn) brother-in-law's sib-friend M_{B2}—M_{A1}
mu-o̱o menígen, cf. female terms

ma-táiñi younger brother-in-law
his younger brother-in-law M_A—M_B
mundū-ma-táiñi elder (firstborn) to younger brother-in-law's sib friend M_{A1}—M_{B2}
matáiñi mitjòñ his younger brother-in-law's younger brother M_A—$M_{B/b}$
his brother's younger brother-in-law's younger brother $M_{A/b}$—$M_{B/b}$
matáiñi menígen, cf. female terms

m-áñaro elder brother-in-law
the elder but not the firstborn brother-in-law M_B—M_A
the elder but not the firstborn brother-in-law's brother or brother's brother-in-law's brother $M_{B/b}$—$M_{A/b}$
màñaro menígen, cf. female terms

me-mbán(?)
elder to younger parents-in-law μ_A—μ_B or φ_B

m-ámbo initiation chum
his initiation chum $(m_1)_1 \times (m_2)_1$
the boys of the two sibs initiated together, who after marriage become *mundū*

ma-rū̄ mother's father (father by females)
his or her mother's father $(m_{B1})_{1 \text{ or } 3}$—$\mu_{A1}$ or $(w_{B1})_2$—μ_{A1}
her (the daughter's) own father after her marriage $W_{(A1 \to) B1}$—μ_{A1}
his or her mother's elder co-wife's father $(m)^{II}$ or $(w)^{II}$—$I\mu$
rū̄-oñab the mother's father, if the first child was a female $(w_{B2})_{1 \text{ or } 3}$ or $(m_{B2})_{2 \text{ or } 4}$—$\mu_{A2}$ (*cf. itjoiñ*)
ma-rū̄gemuin his or her firstborn half brother (the goblin-child) $(w)_2$ or $(m)_3$ or $(w)_4$—$(m)_1$
mundū-m-rū̄ his or her mother's father's sib-friend $(m_{B2})_1$ or $(w_{B2})_2$—μ_{A1}

m-itjóiñ or *mitjòñab* father's father (father by males)
his father's father (not his stepfather's father) $(m_1)_3$—μ_1
her goblin-initiator W_2—μ_1 or W_1—μ_2
his own goblin-father $(m_1)_1$—μ_2
her husband's father-in-law $W_{(B \to) A}$—μ_A

mother's father, if first born is male $(m_{B1})_{1 \text{ or } 3}$—$\mu_{A1}$ or $(w_{B1})_{2 \text{ or } 4}$—$\mu_{A1}$, *cf. rū̄*

mundū-mitjóñab his wife's father's sib-friend M_{B2}—μ_{A1} her father's sib-friend $W_{(A2 \to) B2}$—μ_{A1}

menèin-mitjóñ his or her youngest brother $(w)_1$ or $(m)_2$ or $(w)_3$—$(m)_4$

mo-óro father's sib-friend
his wife's goblin-initiator = his father's sib-friend M_1—μ_2 or M_2—μ_1 (*cf. mu-náta*)

mu-táta wife's father
his wife's father = his sister's father-in-law M_A—μ_B or M_B—μ_A

his or her brother's wife's father (father-in-law) $M_{B/b}$—μ_A or $W_{B/c}$—μ_A

his son-in-law's firstborn brother μ_A—$M_{B/b}$

mundū mutáta his wife's father's sib-friend = his sister's initiator M_{B2}—μ_{A1}

mun-áta stepfather
his or her (the goblin-child's) stepfather $(m_1)_1$—M_1 or $(w_2)_1$—M_2

her husband's stepfather $W_{(B \to) A}$—μ_A

his or her natural father = his or her mother's husband's sib-friend $(m_1)_3$—M_2 or $(w_1)_{2 \text{ or } 4}$—M_1

his or her father's stepbrother or his stepfather's brother $(m_{A1})_1$—$M_{A1/b}$ or $(w_{A2})_1$—$M_{A2/b}$

his or her stepsister's husband $(m_{A1})_1$—M_{C1} or $(w_{A2})_1$—M_{C2}

his or her stepfather's sister's husband $(m_{A1})_1$—M_{D1} or $(w_{A2})_1$—M_{D2}

also: his father's sib-friend = his wife's goblin-initiator M_2—μ_1 (*cf. mo-óro*)

mundū mun-áta his stepfather's sib-friend $(m_1)_1$—M_2

mu-mûeka son-in-law
his or her daughter's husband (son-in-law) μ_A—M_B or φ_A—M_B

his daughter's husband's brother = his son-in-law's brother μ_{A1}—$M_{B/b}$

her son-in-law's brother φ_A—$M_{B/b}$

mundū-mu-mûeka his or her sib-friend's daughter's husband (son-in-law) μ_{A1}—M_{B2} or $\varphi_{(B1 \to) A1}$—M_{B2}

maiùk mumûek, cf. maiúk

mu-ápi his mother's brother
his mother's brother $(m_{B1})_1$—M_{A1} or $(m_{A1})_1$—$M_{B1/b}$

mundū ma-ápi his mother's brother's sib-friend $(m_{B1})_1$—M_{A2}

mu-kúdi her brother-in-law
her husband's brother (her brother-in-law) $W_{(B \to) A}$—$M_{A/b}$

her mother's brother $(w_{B1})_2$—M_{A1} or $(w_{A1})_2$—$M_{B1/b}$

his or her mother's younger co-wife's father $(m)^1$ or $(w)^1$—IIμ

her husband's exchanged sister's goblin-son = her brother's stepson $W_{(B1 \to) A1}$—$(m_{B1})_1$

her husband's (not exchanged) sister's goblin-son $W_{(D1 \to) B1/b}$—$(m_{A1})_1$

the married sister's brother (exchanged or not) $W_{(A \to) B}$—M_A or $W_{(A/c \to) C}$—M_A

mu-kůdoňab his or her daughter's elder co-wife's son $II\mu$ or $II\varphi$—$(m)^{I}$

mundū mukúdi her mother's brother's sib-friend $(w_{B1})_2$—M_{A2}

her brother's married sib-friend $W_{(A2 \to) B2}$—M_{A1}

kùdi mu-máia, cf. mu-maia

mo-úma(ṅ) grandchild

his or her son's son μ_1 or φ_1—$(m_1)_3$

his or her daughter's son μ_{A1}—$(m_{B1})_{1 \text{ or } 3}$ or φ_{A1}—$(m_{B1})_{1 \text{ or } 3}$

his or her daughter's younger co-wife's son $I\mu$ or $I\varphi$—$(m)^{II}$

mundū mo-úma(ṅ) his sib-friend's daughter's son μ_{A1}—$(m_{B2})_1$

her husband's sib-friend's daughter's son $\varphi_{(B1 \to) A1}$—$(m_{B2})_1$

For the following terms see under female term:

mo-ùma menígen

mo-ùma menági

mundū mo-ùma menígen

mundū mo-ùma menági

ma-áia the old one

his or her eldest brother of the matrimonial children $(w)_1$ or $(w)_3$ or $(m)_4$—$(m)_2$ and $(w)_4$—$(m)_3$

his or her elder cousin (m_A) or (w_A)—(m_B) or (w_B) and (m_1) or (w_1)—(m_2) or (w_2)

me-néin the young one

his or her younger brother $(m)_1$—$(m)_3$ or $(w)_2$—$(m)_3$

his or her younger cousin (m_B) or (w_B)—(m_A) or (w_A) and (m_2) or (w_2)—(m_1) or (w_1)

me-nèin miljóṅ his or her youngest brother $(w)_1$ or $(m)_2$ or $(w)_3$—$(m)_4$

m-eñúnumuin the last one

his or her lastborn brother or sister

(b) Female

mu-máiṅ her father's mother

her father $(w_1)_2$—φ_1

her husband's mother = her mother-in-law $W_{(B \to) A}$—φ_A

her brother's wife's mother $W_{B/c}$—φ_A

her son-in-law's (firstborn) sister φ_A—$W_{B/c}$

her initiator's mother W_1—(φ_2)

(*mu-náma*) *ma-muń mu-máiń* her husband's father's sib-friend's wife = her goblin-initiator's wife W_2—φ_1 or W_1—φ_2

mundū mumáiń her mother's female sib-friend $W_{(A2 \to)B2}$—$\varphi_{(B1 \to)A1}$

m-eiáma(ń) her husband's exchanged sister = her sister-in-law, *vice versa* $W_{(A \to)B} \times W_{(B \to)A}$

her sister-in-law

her husband's (not exchanged) sister $W_{(B \to)A}$—$W_{A/b}$

her brother's wife $W_{A/b}$—$W_{(B \to)A}$

her son's stepdaughter φ_{A2}—$(w_{A2})_1$

mundū meiáma her husband's sib-friend's sister or her sister-in-law's female sib-friend and *vice versa* $W_{(B1 \to)A1}$—$W_{(A2 \to)B2}$ (*cf. mamoňab*)

mu-máňa her father's sister = mother's brother's wife, her husband's mother (her mother-in-law) later in case of an exchange marriage $(w_{B1})_2$—$W_{(B1 \to)A1}$

father's sister

his father's sister = mother's brother's wife $(m_{B1})_3$—$W_{(B1 \to)A1}$

his or her father's stepsister $(m_{A1})_3$ or $(w_{A1})_2$—$W_{A1/b}$

her mother's brother's wife $(w_{A2})_3$—$W_{(D2 \to)B2/b}$

his mother's brother's wife $(m_{A1})_3$—$W_{(D2 \to)B2/b}$

his or her father's stepbrother's wife $(m_{A1})_1$ or $(w_{A1})_2$—$W_{A1/b}$

mu-màňa menígen his mother's stepsister $(m_{A1})_3$—$W_{B1/b}$

mu-màňa menági her mother's stepsister $(w_{A1})_2$—$W_{B1/b}$

mundū má-mań his mother's brother's sib-friend's wife $(m_{B1})_1$—$W_{(B2 \to)A2}$

her father's sister's female sib-friend $(w_{B1})_2$—$W_{(B2 \to)A2}$

mu-mańámań his or her firstborn half-sister (the goblin-child) $(m)_2$ or $(w)_3$ or $(m)_4$—$(w)_1$

firstborn half-sister

m-áma her initiation chum, to each other $(w_1) \times (w_2)$

her initiation chum

(the girls of the two sibs initiated together become *mu-náma* after marriage)

m-ámi his or her mother's younger co-wife $(m)^{I}$ or $(w)^{I}$—IIW

younger co-wife

ma-ámo his or her mother's mother $(m_{B1})_{1 \text{ or } 3}$—$\varphi_{A1}$ or $(w_{B1})_{2 \text{ or } 4}$—$\varphi_{A1}$

mother's mother

his or her mother's elder co-wife's mother $(m)^{II}$ or $(w)^{II}$—Iφ

mundu ma-amo his or her mother's father's sib-friend's wife $(m_{B2})_1$ or $(w_{B2})_2$—$\varphi_{(B1 \to)A1}$

me-níginik his wife's mother = his mother-in-law M_B—φ_A

his mother-in-law

his brother's wife's mother $M_{B/b}$—φ_A

mundū menǐginik his wife's mother's female sib-friend M_{B2}—$\varphi_{(B1 \rightarrow) A1}$

mu-ngóm daughter-in-law
his or her son's wife = his or her daughter-in-law μ_A or φ_A—$W_{(B \rightarrow) A}$
his stepson's wife μ_{A2}—$W_{(B2 \rightarrow) A2}$
her son-in-law's sister φ_A—$W_{B/c}$
mundǔ mungóm his sib-friend's daughter-in-law, whom he initiated as goblin μ_1—W_2
his or her sib-friend's married daughter μ_{A1} or $\varphi_{(B1 \rightarrow) A1}$—$W_{(A2 \rightarrow) B2}$
munáma mungóm her husband's sib-friend's daughter-in-law = the woman initiated by her husband φ_1—W_2 or φ_2—W_1

mu-mágendoṅ or *mu-mándoṅ* his brother's wife
his brother's wife = his sister-in-law $M_{A/b}$—$W_{(B \rightarrow) A}$
his sister in exchange-marriage who married his wife's brother M_A—$W_{(A \rightarrow) B}$ (*cf. iukroin*)
her husband's sister's first daughter = her brother's stepdaughter $W_{(B2 \rightarrow) A2}$—$(w_{B2})_1$
his or her stepfather's sister = his or her mother's brother's wife $(m_{B1})_1$—$W_{(B1 \rightarrow) A1}$ or $(w_{B2})_1$—$W_{(B2 \rightarrow) A2}$
his mother's stepbrother's wife = his (the goblin-son's) mother's brother's wife $(m_{A1})_1$—$W_{(D1 \rightarrow) B1/b}$
her mother's stepbrother's wife = her (the goblin-daughter's) mother's brother's wife $(w_{A2})_1$—$W_{(D2 \rightarrow) B2/b}$ (*cf. kudi*)
her husband's sister's goblin-daughter $W_{(D2 \rightarrow) B2/b}$—$(w_{A2})_1$
magendómuma his sib-friend's married sister M_{A1}—$W_{(A2 \rightarrow) B2}$
mundū màgendoṅ me-mɨ̀aṅ see under *me-mɨ̀aṅ*
mundū màgendoṅ ma-iúk see under *ma-iúk*
menágendo see under *menígen* (*me-nèin menígen mitjóṅ*)

ma-áitji the older one
her eldest sister of the matrimonial children $(w)_4$—$(w)_2$
the cousins of the younger mother to the elder cousins (m_B) or (w_B)—(m_A) or (w_A)

menígen his female
his female relative (used as a determinative expression in compounded designations)
ma-ài-menígen his eldest sister of the matrimonial children (m_1) or $(m)_3$—$(w)_2$
his elder sister $(m)_2$—$(w)_3$
younger male cousins to elder female cousins $(m_B)_1$ or $(m_B)_3$—$(w_A)_2$ or $(w_A)_4$

me-nèin menígen his younger sister $(m)_2$—$(w)_2$
elder male cousins to younger female cousins $(m_A)_1$ or $(m_A)_3$—$(w_B)_2$ or $(w_B)_4$
me-nèin menígen mitjóṅ or *menágendo* his youngest sister $(m)_1$ or $(m)_3$—$(w)_4$
eṅùnumuin menígen his last-born sister $(m)_2$ or $(m)_4$—$(w)_5$
mo-ùma(ṅ) menígen his daughter's daughter μ_{A1}—$(w_{B1})_{2 \text{ or } 4}$
mundū mo-ùma menígen her husband's sib-friend's daughter's daughter = sib-grandmother on mother's side $\varphi_{(B1 \rightarrow) A1}$—$(m_{B2})_1$
in the additional relations between sibs the term *mundū* is preposed
ma-tàini menígen his firstborn brother's younger brother-in-law's wife $M_{A/b}$—$W_{(B \rightarrow) A}$
mu-o̲o menígen his brother's elder firstborn brother-in-law's wife $M_{B/b}$—$W_{(A \rightarrow) B}$
m-àṅaro menígen his elder brother's elder brother-in-law's brother's wife $M_{A/b}$—$W_{(C \rightarrow) B/b}$

menági her female
her female relative (used as a determinative expression in compounded designations)
ma-ài(a)-menági her elder sister $(w)_4$—$(w)_2$ (*cf. ma-áitji*)
younger female cousins to elder female cousins $(w_B)_2$ or $(w_B)_4$—$(w_A)_2$ or $(w_A)_4$
me-nèin menági her younger sister $(w)_1$—$(w)_3$
elder female cousins to younger female cousins $(w_A)_2$ or $(w_A)_4$—$(w_B)_2$ or $(w_B)_4$
me-nèin menàgi mitjóṅ her youngest sister $(w)_2$—$(w)_4$
eṅùnumuin menági her lastborn sister (w_1) or $(w)_3$—$(w)_5$
mo-ùma(ṅ) menági her daughter's daughter φ_{A1}—$(w_{B1})_{2 \text{ or } 4}$
her son's daughter φ_1—$(w_1)_2$
his or her daughter's younger co-wife's daughter $I\mu$ or $I\varphi$—(w) II
mu-ṅàiepin menági her child's mother-in-law, *vice versa* $\varphi_{(B1 \rightarrow) A} \times \varphi_{(A1 \rightarrow) B1}$

miniák woman
mundū miniák or *mundū mumáia* see under *mumáia*

Summary of Some Particular Terms

(*a*) terms employed for male and female

The female sex may be expressly designated by the addition of *menígen* or *menági*

mu-ñáiepui (voc.: *máeipui*) parents of the married children
me-tiaña younger cousins
ma-áitji elder cousins
mo-úmañ grandchild
ma-áia elder cousin or brother or sister
me-néin younger cousin or brother or sister

(*b*) reciprocal terms

(1) Fully reciprocal terms

(*α*) *Reciprocal terms employed in the same generation*

(1) *Male*

mu-ndū his sib-friend
mu-ñáiepui { his child's father-in-law / the parents of the married children }
m-ā̃mbo his initiation chum

(2) *Female*

mu-náma her female sib-friend
m-eiáma(ñ) her sister-in-law
m-áma her initiation chum

(*β*) *Between the extreme generations, i. e., the children and grandparents*

mu-má noñab her little sib-friend
māndu . { his step-relation
mundûoñab { his little sib-friend }

(2) Complementary terms (between the different sexes)

(*α*) *in the same generation*

mu-máia—mu-móna his wife—her husband

(*β*) *Between the extreme generations*

mu-máioñab—mu-mónoñab his little wife—her little husband
mu-kúdi—mu-mágendoñ her brother-in-law—his sister-in-law

(*c*) diminutive forms

(1) *Male*

mu-mónoñab little husband
mu-ndûoñab little sib-friend
rū̃-oñab little mother's father
m-itjóñab little father's father
mu-kûdoñab little (girl's) mother's brother

(2) *Female*

mu-máioṅab little mother-wife
iu-króinoṅab little married sister
mu-namoṅab little female sib-friend

(*d*) DESCRIPTIVE TERMS

These are especially used to denominate brothers, sisters, and cousins, and for distinguishing the sexes.

ma-àia-menági her old female = her elder sister
me-nèin menígen his young female = his younger sister
na-mḛaṅ the old son = her elder son
nàmre-iúk the other daughter = her elder daughter
mài-de-ngíniṅ with two wives = a husband of two wives

(*e*) INTERPRETATION OF SOME TERMS

áia old
néin young
me-néa the (his or her) young female
me-nígen his female relation
me-nági her female relation
mitjóṅ the little one
man or *nam* the other one, the strange
vůeka man *vůek* male
miniák woman
ítji the extreme point
a-ítji the eldest
iúk-miljòṅ little daughter
morō goblin, also seed of plants
morō-muruk triton's horn
morǒ-mere bugling the triton's horn
mòtno-vůeka widower
màt-miniák widow
gindjíriiut married
vinpēt unmarried
ṅnánen-dop my village
nánen-dop thy village
mánen-dop his village
dánen-dop another village

Discussion

AVOIDANCES

Before considering the terms of relationship, there are certain avoidances to be noted. First, the initiated woman $W_{(B1\rightarrow)A1}$ in speaking to her goblin-initiator μ_{A1} never calls him by his proper name, nor does she ever pronounce his name to others, probably for the reason that the goblin-father, on account of the mystic rôle he plays as a kind of superhuman being, must always be treated as such by her, and not like a common man. Second, the father-in-law never pronounces the name of his son's wife, his own daughter-in-law.

I may in this instance refer to what I said in the first part on the organization of the Bánaro (p. 261) about the bridegroom's father's ceding his right to his sib-friend. The reason apparently is that he is so anxious to avoid the suspicion of intercourse that he is unwilling even to mention his daughter-in-law's name. As reason for both avoidances, there may perhaps be adduced a suggested inhibition of memory, in the first case because of the bride's shock of fright, in the second case on account of the disagreeable renunciation on the part of the ceding father-in-law.

In reference to the first-mentioned case, I do not mean, of course, that the bride has really forgotten her goblin-initiator's name. Resistance and reluctance are psychologically associated with sexual emotions, and are mirrored in almost all ceremonials connected with them. In the tabooing of the initiator's name I see the expression of such an inhibition.

MARRIAGE

Proceeding to consider the terms of relationship we first note the identity of the term for wife with that for mother. The explanation is certain, when we recollect from the marriage customs that the bridegroom marries a woman who has already given birth to a child.

The peculiarity of the system under discussion leads to a number of further complications. As a consequence of the exchange marriage the wife's sister-in-law (brother's wife) is the husband's

sister, and the husband's brother-in-law (sister's husband) is the wife's brother. The relationship between these two women $W_{(A1\rightarrow)B1}$ and $W_{(B1\rightarrow)A1}$ is fixed by a double bond of marriage, whereas another sister of the husband is connected by only a single tie. In the denomination of the relationship, the difference in their ages is taken into account, and this is calculated from the age of the woman's husband. A woman $W_{(B1\rightarrow)A1}$ would classify her sister-in-law $W_{A1/b}$ as younger if this sister-in-law $W_{A1/b}$ is the younger sister of the woman $W_{(B1\rightarrow)A1}$'s husband M_{A1}, and *vice versa*, *matáini menigen* being the appellation for the younger one, *meiáma* for the elder. But I was also told that *meiáma* could be used indiscriminately. The relationship between the two intermarrying husbands themselves is however denoted only with regard to their respective ages, the elder being denominated *muō'o*, the younger *matáini*.

As a result of this doubling of marriage ties the following triple bond of relationship ensues, the husband's mother-in-law $M_{B1} - \varphi_{(B1\rightarrow)A1}$ is his father's μ_{B1} sister, whereas the woman's mother-in-law is her father's sister. (See last paragraph p. 386.)

Considering this relationship from the children's point of view, the mother's brother M_{B1} is the husband of the father's M_{A1} sister $W_{(A1\rightarrow)B1}$. There is no clear distinction possible between father's and mother's branch, for through the exchange marriage the (step)father's side becomes that of the mother by the fact that his sister's husband is the mother's brother. It is obvious that the children of the father's branch are not differentiated from those of the mother's, nor from the cousins of the intermarrying gentes.

It is noteworthy that the daughter, when married, no longer calls her father *ṅniō*, my father, but *rīi*. This is the name the woman's children apply to him (their mother's father), *i. e.* their grandfather. In a similar manner the children's term for their mother, *ma-máia*, is used by their father as the designation for his wife.

That after marriage the daughter ealls hcr father *rīi*, not *ṅniō* seems also to indicate, that she is anxious to express her adherence

to the new gens into which she has entered.[1] The gens organization being orientated after the men, the mother's title is not changed, she is still called *ma-máia*. Nor does the father cease addressing his child as daughter. There is of course no reason why a man should change the appellation of his parents after marriage, as he remains in the same sib and gens. But his position has been specialized towards his sister who has been exchanged for his wife and married to his wife's brother. Therefore separate terms are used between the exchanged pair of brothers and sisters, he calling her *mágendoṅ*, she answering him by the term *kúdi*. Segregated from the *mágendoṅ* is the other married sister, the *iúkroiṅ*, who was not given in exchange for his wife.

In the denomination of the sister's son there is also a difference between *mágendoṅ-memẽaṅ* and *iúkroiṅ-memẽaṅ*. If the man is married to his sister's husband's sister, that is, if his sister's children are the offspring of an exchange-marriage with his wife's brother, he calls them *mágendoṅ-memẽaṅ*, she being his *mágendoṅ*, *i.e.*, his exchanged married sister, otherwise she becomes his *iúkroiṅ*, her sons *iúkroiṅ-memẽaṅ*, and her daughters *iúkroiṅ-maiúk*.

The expression marriage as we use it does not denote the real state of affairs in the case of the Bánaro tribe. The term marriage implies a persistent and uninterrupted union of male and female with the exclusion of multiplicity on at least one side (polygyny or polyandry). Among the Bánaro the union is not continuous but interrupted. There is a group of three or four persons of each sex participating in the sexual relations. Initiation ceremonies, but not marriage rites, lead to unions of the sexes. The institution of wedlock is very different from ours. A man is entrusted with the tutorship of a certain woman without formality. In consequence he becomes her mate and the tutor of her offspring.

The change of terms for the father of the marrying woman and between brother and sister after marriage might be traced back to the change of gens on the part of the female.

[1] Prof. Kroeber suggests that the mother simply adopts her children's denomination for their grandfather.

PATERNITY

We find three different names designating paternity in accordance with its three institutions. Of such is (1) the goblin-initiation resulting in a special denomination. The ordinary marriage that constitutes a kind of guardianship of the husband over his wife's children brings it about that the husband becomes (2) his wife's goblin-child's stepfather and (3) the father of his own children with his wife. The possible issue of the *mundū* institution demands no special designation as to the fatherhood. It seems as if sexual relations and care for the offspring are particularly differentiated. The husband is the tutor of his wife's children probably in return for her plantation work and her providing of a constant vegetable food.

(1) The goblin-father who initiates the mother is called *moró-miñiō* or *mitjóiń* by his goblin-child. The first term means literally, goblin-father. The second name requires especial attention. Its meaning is, the small one, a designation in harmony with the many diminutive forms used for addressing old persons. The woman also addresses her goblin-initiator as *mitjóiń* (or *ṅnaio-uuri*). The mother and her goblin-son apply the same term *mitjóiń* for the same person in a similar manner, as we noticed the husband calling his wife mother. The term *mitjóiń* does not in this case alone ignore the generation principle. It is also used for the father's father $(m)_3 - \mu$ and the diminutive form *mitjóṅab* for a woman's husband's father $W_{(B\rightarrow)A} - \mu_A$. The similarity of the term used for her father-in-law with that for the goblin-initiator would confirm the hypothesis that the sib-friend replaced the father-in-law who originally may have exercised the *jus primae noctis*. The appellation *itjóiń* is also used for a curious distinction as regards the mother's father. If the series of children begins with a male this term is used to qualify him as the male father (in reference to the father's father as well as to a son's fathership). But if the mother first gives birth to a daughter the mother's father is called *rū̄* or in diminutive form *rūoṅab*.

This term is used not only by the mother's firstborn daughter but also by the rest of the children. It seems to express the female

father, meaning from the female side or father of females. It appears that a certain magic influence is ascribed to the mother's father in the determination of the sex of the firstborn child.

(2) The mother's husband is the goblin-child's stepfather and is called *mun-áta*. The same term is also used by a child having its mother's husband's sib-friend for its natural father, $(m)_3 - M_2$. The stepfather, the mother's husband, calls the goblin-child *moro-memḗan* or *aia-mḗan*, the latter meaning old son, whereas he addresses the child of his sib-friend's union with his wife as *mundū-memḗan*, friendship's son. The term *áta* is used for various connections between the two sibs expressing the relation of a stepfather or an analogous connection, as for instance a man's stepsister's husband or his stepfather's sister's husband. The similarity between this term and the designation for father-in-law, *mu-táta*, should here be noted. The obvious similarity of these two terms might be adduced as support for a theory of a previous inter-sib marriage as outlined in a later chapter (p. 374). There is still the relation of stepfathership, namely between the goblin-father and the marital children of the woman he initiated. These relations however are not classified as semipaternal but as between sib-friends of different generations using the terms *mā̄ndu*, young sib-friend, and the diminutive *mundūoñab*, little sib-friend between the males, the corresponding *m-ama*, young female sib-friend, between the females, and the complementary terms *monoñab*, little husband, and *maioñab*, little wife, among males and females respectively. This terminology would of course also favor a theory of ancient inter-sib marriage.

(3) The proper term for father is *miō*, or *niō* his father *mi-ñiō*, and is used by the rest of the children, in spite of the fact that on festival occasions a ceremonial cohabitation with a *mundū* takes place, in the first years with the goblin-initiator and later with the husband's sib-friend. Thus paternity is never assured except in the case of the goblin-child. It is noticeable that the term for father is shared only with the child's father's brother and its father's or mother's sister's husband $(m_{A1})_3$ or $(w_{A1})_2 - M_{D1}$ or $(m_{A1})_3$ or $(w_{A1})_2 - M_{C1}$. This indicates a sharp distinction as to

the various relations resulting out of the social system as far as the grown-up people are concerned. But the contrary holds true in regard to the children. Here we find only few distinctions and the terms for son and daughter belong to the most general designations, especially if we include the compound terms mostly neglected when addressing persons.

When proceeding to consider the relations between the extreme living generations, the grandparents and the grandchildren, we meet with some peculiarities. What first requires attention is the use of a number of complementary, even of reciprocal terms otherwise used within the same age-class. These terms moreover often represent diminutive forms which can be applied to both sides, but particularly to the oldest generation. The use of diminutive forms for the old age-class may seem queer at the first glance, but the German phrase "growing old and *small*" might be recalled. This by the way is certainly an expression coined on a psychological basis.

The most striking feature however is that grandparents and grandchildren of the opposite sex apply the term, husband, or, wife, for each other. This feature is however not without a parallel in other South Sea tribes as demonstrated by Rivers.[1]

Let us first consider the application of the complementary terms *mónoñab*, little husband, and *máioñab*, little wife.

These appellations have already occurred in the relations between the goblin-initiator and his wife in connection with the initiated woman's female and male children, and consequently between the extreme generations across the two sibs.

These complementary terms are used across the two sibs also

[1] *History of Melanesian Society*, II, pp. 52–3 and 60–1. The custom of intercourse between grandparent's brothers and sisters and the grandchildren of the former has been found on Pentecost Island (Rivers, *Kinship and Social Organization*, p. 3 *seq.*) and has further been reported from the Dieri of Australia (Howitt, *Native Tribes of South East Australia*, p. 164, 17 *seq.*) A corresponding nomenclature from which a similar custom may be deduced is in existence among the Buin people, Solomon Islands (*cf.* the writer's article in *Zeitschrift für vergleichende Rechtswissenschaft*, 1910, XXIII, p. 330) and in Fiji. In the New Hebrides this custom is practised with the grandmother herself. (Rivers, *Kinship*, p. 39–40; *History*, I, p. 203, and his article "Marriage" in *Hastings' Encyclopaedia*).

in the case of the goblin-child, namely, in his relation to the goblin-initiator's wife, if it is a son, and if it is a daughter in connection with the goblin-initiator himself. The goblin-father calls his own daughter little mother-wife and she in return calls him little husband. Further consideration will be devoted to this subject below (p. 327). The goblin-son calls his goblin-father's wife *mumáia* without a diminutive, this because it is she who initiates him at the puberty ceremonies as noted in the first part (p. 266). Across the two sibs the complementary terms in consideration are also employed between the son of the one sib and his mother's female sib-friend in the other sib and this without the use of diminutive forms. Here the reason is evident as this boy is charged with the care of this woman in case her husband dies and she is obliged to provide him with vegetable food, relations which in New Guinea generally indicate marital bonds.

But also within the sib these complementary terms are employed. First we find that the goblin-daughter and her stepfather's father use the respective appellations wife and husband and this again without diminutive forms. This seems as in the preceding case to suggest real sexual relations. In spite of the fact that these relations would take place within the same sib, the persons concerned are no near blood relatives, the girl's goblin-father having come from the other sib and her mother from the other gens. I have no positive information as to this matter, but I would argue that possibly she takes care of him after he becomes a widower. Historically I should feel inclined to interpret this appellation as a sign of the power the old men exercised over the females of their sib.

Parallel to the foregoing case we find that the goblin-son exchanges the complementary terms discussed here—and that in diminutive forms—with his stepfather's mother. There exists however no near affinity of blood between these two either. My informants hinted that she also, on occasion, initiates the boy at the puberty festival.

Startling for us again is the fact that these denominations are used mutually between the ordinary sons and their father's mother. It must however be remembered that the paternity of the children

with the exception of the goblin-child cannot be fixed. Moreover the fact of descent seems to be of secondary importance in comparison with personal responsibilities such as the tutorship of the father, and the functions played in the ceremonial system. Thus descent seems already to be ignored when it comes to the second generation, for the direct grandmother on the father's side was also reported to me as one of the women who might initiate the young boy.

The question of how far the complementary terms of husband and wife correspond to real sexual ties ought not to be avoided. This one fact at any rate is obvious, that they do not imply lasting relations, but only hint at occasional or supplementary connections of a more transitory character.

But even in such case strange coincidences occur, especially in regard to near blood relatives, as even between the goblin-father and his own daughter. It seems to be certain that the full (non-diminutive) terms imply real sexual relations. Some of the diminutive terms certainly indicate the execution of supplementary function. How shall we account for the complementary denominations between the goblin-father and his own goblin-daughter? These might perhaps be explained by the fact that between extreme generations the corresponding sexes in the cross-sib relation designate each other by the complementary terms for husband and wife. And this term has been extended in meaning to include the goblin-daughter's relation with her goblin-father. These appellations certainly favor the theory of an ancient inter-sib marriage and the goblin-father's exchange of terms of marital significance with his own goblin-daughter seems to indicate a matrilineal family. However the denominations used within the sib between the stepfathers' parents and the goblin-child would seem to point to a patrilineal descent in the ancient sib.

This opinion would be further supported by another fact, namely, the appellations of the same sexes between the extreme generations. Whereas between different sexes in the relation of the goblin-child and his step-father's parents the terms husband and wife are exchanged, the sib-friend designations are used within the same sex, namely, by the names *m-āndu*, diminutive *mundūoṅab*,

little sib-friend; between the males; and by *m-áma*, diminutive *mámoñab*, little female sib-friend, among the women. The same parallel holds true in the relation of the goblin-father and his wife towards his goblin-child's stepbrothers and stepsisters, *i. e.*, between the two sibs, consequently, the goblin-child's connections with his stepfather's parents are provided with the same names as the relations between different sibs, a further instance indicating a former patrilineal descent in the ancient sib.

Within the same sib the denominations between the real grandchildren and the father's parents differ. The old man calls his son's son (*mo-*) *úmañ*, the boy his father's father (*m-*)*itjóiñ*, on the female side the old woman calls her son's daughter (*mu-*)*ménage*, the girl her father's mother (*mu-*)*máiñ*. These terms are in some way analogous to the appellations exchanged with the grandparents on the mother's side, although there is not any allusion to sexual relations between different sexes as on the paternal side, the appellations being used independently of the speaker's sex.

The term *mo-úmañ* covers the designation of the grandchild except in cases where sexual relations are alluded to as described above. *menągi* means simply her female (descendant). The denomination of the mother's father according to the sex of the firstborn child was mentioned previously; *itjóiñ* seems to indicate a connection with a male grandfather, whether connected through the father or by his daughter's giving birth to a son. Father's mother and mother's mother are designated differently. *mu-máiñ*, the term for father's mother includes also the woman's mother-in-law, *i. e.*, her husband's mother. If we analyze the term we become aware that the speaker is a female, the person spoken to is also a female, the connecting link a male, generations are different, and no attention is paid to the number of generations; practically it is the term by which a young woman addresses an old one. *ma-ámo* seems to be entirely differentiated for the designation of mother's mother.

MATERNITY

Attention has already been accorded to the identity of the words for mother and wife. Indeed we find the term *mu-máia*

with the widest range of meaning. In the system presented here the most comprehensive terms are *máia*, mother, wife, *mẽaṅ*, son, and *iúk*, daughter. Contrary to the differentiation of the terms for paternity brought about by the social organization, motherhood is expressed by only one word. But this name is extended to women who in accordance with the custom share in the nursing of the child.[1] For this reason it also refers to the mother's sister, to the mother's elder co-wife, to the father's brother's wife, and to the father's unexchanged sister. But the father's exchanged sister, his *mágendoṅ*, is termed *mu-máṅa*. As she is expected to give birth about the same time as the father's wife—both having been initiated simultaneously—she is less able than the others to help in nursing. For this reason, it may be, the father's female relatives are excluded from giving aid in nursing and consequently certain females are classed together as related to certain men and belonging to the next higher age-class, as the father's stepsister or the father's stepbrother's wife and the mother's brother's wife.

For a woman's father's mother is used the same term *mu-máiṅ* as for her husband's mother. This alternating reference to a woman's father's female relations of the same age-class and her husband's mother are confirmed by the compound terms *māmuṅ mumáiṅ* for her husband's father's sib-friend's wife and *mundū mumáiṅ* her mother's female sib-friend. There are two explanations at hand. One might perhaps be induced to say that the alternating use of husband and father must be explained somewhat in the same way as the merging of the terms for mother and wife, basing this assumption on a state when no definite distinction between husband and father was made. Or we may accept the term as originally meaning a woman's mother-in-law and later applied to another

[1] The participation in the nursing of the child was reported to me also from the Admiralty Islands (Lambutjo). Rivers, *History*, II, 139–40, deduces from the custom in Motlav Island (Banks Islands) of handing round a firstborn child to all the women of the community a survival of an ancient condition of community of children. The lack of a differentiation between brothers, sisters, and cousins in the Bánaro system could be interpreted in the same way.

The Arabs recognize community in nursing a child as a tie of kinship. Nourishment in common constitutes the tie of "commensality" among the participants as a social relation like kinship. W. R. Smith, *Religion of the Semites*, 274, and *Kinship and Marriage in Early Arabia*, 1903, p. 176–7.

female older than herself and related to a man older than the woman. As she is initiated by a man of the next higher age-class, of the age-class of her father, her father's mother would belong to the same generation as her initiator's mother, and hence the term would also be applied to her husband's mother.

A man's mother-in-law is expressed by the term *menîginik*, with the approximate meaning, his female relative. This name stands only for this connection.

The designation for a woman's mother's mother, *ma-ámo*, is shared only with a boy's or a girl's mother's elder co-wife's mother and to the corresponding sib relation.

COLLATERAL KINSHIP

The collateral relatives are mainly distinguished according to difference in ages. This principle holds true not only with brothers and sisters but also with cousins; it is a stronger factor than adherence to the sib or even to the gens. The relation of cousins is not determined by the number of births intermediate between one person and the other, and consanguinity is not measured by degrees. Descent from certain parents is important only from the viewpoint of priority of birth, as to which pair of parents is the elder and which the younger. Their respective children consequently classify each other as older or younger according to the relative age of their parents. A few modifications are due to the marital institutions, namely the particular descent of the goblin-child. A distinction is made with reference to the sex of the firstborn. It has been mentioned above that even the mother's father's denomination varies with the sex of the goblin-child. The importance accorded to the sex of the firstborn may be explained by the exchange marriage system. The sex of the following children is regulated by killing the children of the undesirable sex. This control of sex is intended to assure an even mating, as explained in the first part. In the goblin-child's denomination no difference is made whether a brother's or a sister's relation to him is considered. The rest of the children designate each other as younger or older; if it is a sister the word for female is added. This word is *menîgen* if a man is speaking, *menági* if a woman is the speaker. The sex of the speaker

is of grammatical but not of logical importance when collaterals are designated. In this feature, the Bánaro terminology differs from the usual Melanesian nomenclature.[1] Practically there are no special terms for designating the simple collaterals, brothers, sisters, and cousins. The absence of further discrimination between *Geschwister* and cousins has been regarded as a sign of former promiscuous marriage community. It is not necessary to suppose an indiscriminate mingling of the sexes. Customs as presented by the Bánaro system consisting in a kind of individualized community suffice to obscure the full parentage and lead to a nomenclature not only ignoring the personal parents but also the particular subdivisions within the tribe. The only viewpoint for classification within the youngest generation is therefore found in the relative age of the individuals composing the tribe's offspring. The system in consideration doubtlessly tends in general to cause specified distinctions in the relations between kindred members of the tribe, and consequently makes use of the only possible distinctive principle. This differentiation implies a special importance as age is decisive for arrival at puberty and the initiation ceremonies, introducing a set of the tribal descendants to sexual life.

The term for goblin-brother, the firstborn half-brother of the rest of the brothers and sisters, is *rũgemuiń*. It deserves attention for its obvious connection with *rũ̄*, the mother's father. We were told that this term is applied to him only if the first child is a female. It appears as if the relationship of younger people towards an older male were determined through the female side. The derivative *rũgemuiń* is employed also by younger people towards an evidently older male connected through a female, their common mother.

The firstborn half-sister, the goblin-sister, is called *máńamań*. We have become familiar with *mu-máńa* the appellation for father's married sister or stepsister *i. e.*, mother's brother's wife, etc., in other words, a designation for an older female connected by marriage. That the goblin-sister's name is derived from such a designation seems also to be the consequence of an assimilation to

[1] In this as a general rule each sex uses special terms for the same sex, others for the different sex. The difference of age is considered only within the same sex (mostly among men) not between the unlike sexes.

associated bonds of kinship, for the goblin-children are considered as belonging to their stepfather's generation.

ASCENDING COLLATERAL RELATIVES

The exchange system is apt to blur the demarcation between the mother's and the father's line, the father's sister becoming the mother's brother's wife and the mother's brother being the father's sister's husband. Nevertheless adherence to the gens is accentuated by designating the other relatives not involved in the exchange marriage in a different manner, if they stand on the father's side or if they are connected through the mother.

Considering first the relatives on the father's side, we find a boy's father's brother designated as father and his wife as mother. So the male members of the sib are fathers, their wives, mothers; an instance supporting a theory of an originally extended group-marriage.[1] A man's father's stepbrother or a man's stepfather's brother is designated as *mun-áta*, his stepfather, his wife as *mu-máña*, his stepmother. Consequently the ties of kinship brought about by the father's brothers or half-brothers are treated in the same way as those of the father himself, if the person concerned is a man. And it is the same if it is a woman. The nephews and nieces in return are known as son and daughter according to their sex. The stepbrother's children moreover are distinguished as to the relative ages of their father and of his stepbrother.

The father's sister is designated in two different ways, according to whether she was exchanged for the child's mother or not. If she was not exchanged for the child's mother she and her husband are called mother and father and they denominate their nephews and nieces son and daughter as in the case of the father's brother. The father's sister, however, by her marriage enters into another gens. Thus people of another gens are also termed parents. May we induce from this fact a previous state of endogamy without gentes?

The exchanged sister of a child's father becomes the mother's

[1] Of course restricted to certain individuals as pointed out on p. 281. The levirate practised by the surrounding tribes may be traced back to the same source. Whether the Bánaro ever observed the levirate cannot be stated on account of lack of historical evidence.

brother's wife. A distinction is made in connection with the initiation institution, the stepfather's exchanged sister being called *mágendoň*, the real father's sister *mu-máňa*. The stepfather's sister in reciprocation also terms her brother's stepdaughter, *i. e.*, her husband's sister's first daughter *mágendoň*, but the male goblin-child of her husband's sister, *i. e.*, her brother's stepson, *kúdi*. The term *mágendoň* otherwise employed by a man for his sister given in exchange for his bride is here used in the above mentioned relations. This use of the term goes to prove that stress is laid on descent from the father.[1] The goblin-child's father belongs to the same age-class as the stepfather's father and therefore in kinship terms the goblin-children are considered as belonging to their stepfather's generation. The term *kúdi* is to be discussed in a following paragraph.

The real father's exchanged-sister, termed *mu-máňa*, is differentiated from the not-exchanged-sister, called mother. Perhaps the emphasis is rather placed upon her other relationship as mother's brother's wife. In spite of this she calls her brother's children, son and daughter, which constitutes an incongruity in the system.

On the mother's side the most prominent person is the mother's brother. His nephew calls him *ápi*, but his niece *kúdi*. The term *ápi* is employed only in the unique relation of a boy towards his uncle on the mother's side. This fact expresses the importance of his social rôle as the boy's protector who takes part in all initiation ceremonies as a kind of representative of the mother's family. That the mother's brother is not of the same importance for a girl is symbolized by her use of another expression for maternal uncle, *kúdi*. Above we met the term *kúdi* as a designation for a woman's brother's stepson, *i. e.*, her husband's exchanged-sister's goblin-son. The word occurs again as an appellation for a mother's younger co-wife's father, a married woman's brother, and for a girl's mother's brother. The term *kúdi* is therefore used by a female in speaking to certain males of her own generation and of the first generations above and below hers, but who adhere to another gens, as in the usages just cited. Corresponding terms are used for the mother's

[1] *Cf.* (1, p. 276).

not-exchanged-brother and his wife. *Kúdi* as well as *ápi* call niece and nephew daughter and son.

The mother's sister and her husband are denoted mother and father and they add to the terms by which they designate nephew and niece the word for female indicating transmission by the mother's sister.

SIB AND GENS

The following table shows the kinship terms by sib and gens:

I. Within the gens
  a. (Family relations without regard to the partition into two sibs):
    me-mę̣aň son
    mi-ňiō father
    mu-móna husband

    mu-máia mother-wife
    ma-iúk daughter

    mi-tjóiń father's father

    ma-áia elder brother or sister
    me-néin younger brother or sister
    m-eňúnumuin the last born
  b. Inter-sib relations
    mu-ndū sib-friend
    mu-náma female sib-friend

    m-ā̃mbo initiation chum
    m-áma female initiation chum

    m-ámi younger co-wife
    m-ámo mother's mother

    m-óro goblin-initiator
    mun-áta stepfather

    mu-máňamaň firstborn sister
    mu-rū̃gemuiń firstborn brother
II. Between the gentes
  mu-ňáiepui parents-in-law
  mu-o̤o firstborn brother-in-law (goblin-child)
  ma-táiń̃i younger brother-in-law
  ma-áňaro elder brother-in-law
  ma-rū̄ mother's father
  mu-táta wife's father
  mu-mûeka daughter's husband

mu-ápi his mother's brother
mu-kúdi husband's brother (her married brother)
mo-úman daughter's child

mu-máiń father's mother
m-eiámań her sister-in-law
mu-máńa father's sister
me-níginik wife's mother
mu-ngóm daughter-in-law
mu-mágendoń his brother's wife (his married sister)

ma-áitji elder cousin
me-tíaña younger cousin

The relations between the two sibs are characterized by the term *mundū* among the males of the same age-class initiated together, and *mu-náma* among the females, initiated in common. The men call the women *mundū-mumáia* or *mundū-miniák*, sib-friend's wife, or, sib-friend's woman, and the latter return to the males the terms *mundū-mumóna* or *mamánu mumóna*, sib-friend's husband, or female sib-friend's husband. Their semi-martial connection was described under the heading "Social Organization."

The other sexual relations with the goblin-initiator were mentioned in the chapter dealing with paternity. In this case different age-classes come into consideration.

In both cases the sexual communion is occasional, associated with ceremonies, and takes place in the goblin-hall. The relations in the same age-class are granted to the men first, later the semi-marital relations embracing the two age-classes are accorded to them; the women on the contrary partake first in the ritual performances between the different generations and later in the same age-class. The one form is always replacing the other; they are not both practised in the same period.

The appellations among the members of the two sibs are determined by these ceremonial relations. But the part the goblin-initiator plays is not quite properly expressed in the denominations, as he remains in the rôle of goblin-actor. The coining of terms referring to persons in the other sib results from the relation of the two sib-friends in exchanging their wives in the same generation. A woman of the other sib is assigned terms of relationship corre-

sponding to those of the position she would occupy in the speaker's sib, only *mundū* or *munáma* respectively for males or females is added. Thus all relations of the person in one sib find their parallel in the relations of his sib-friend, by whom he is introduced to the other sib's kin. The additional term *mundū* or *munáma* is omitted in ordinary conversation and only employed if special distinction is required.

There are two sib relations of peculiar distinction. One is that of a boy towards his sib-aunt, namely his father's or stepfather's sib-friend's wife, $(m_1)_1$ or $_3 - W_2$. He is charged with the care of her in case her husband dies, and exchanges with her the terms for marital relations as his sister does with her father's sib-friend. The other case referred to is the exchange of designations between a woman's husband's own goblin-daughter and a firstborn girl's own goblin-father's wife $(w_2)_1 - \varphi_1$. They call each other reciprocally *mámoñab*, *i. e.*, little female sib-friend, using the diminutive form between the extreme age-classes. The sib-friendship between these two women would imply a sexual relation between the two couples of odd sexes. But as the girl is not yet married the reference must be to the old woman's husband. This man is the girl's mother's initiator. But indeed he calls her little wife as she calls him little husband. Not only that, but the girl's brother exchanges the term for little wife and little husband with the above-mentioned old woman. We find however the term *mámoñab*, little female sib-friend, used between two females in the extreme age-classes in the cases where among different sexes the terms for husband and wife are used complementarily, as with the grandparents. Indeed it seems as if we were justified in assuming an ancient group exogamy among the members of the two sibs.

Turning to the gens, we notice a remarkable difference in terms as compared with the appellations between sibs. Relations between two gentes are determined by certain individuals, namely the girls exchanged or handed over. Whereas the connection between the sibs is inherent and inherited, the relation among gentes is freely chosen. Whenever such a relation is established a special agreement is concluded. The agreeing parents of the intermarrying

couples therefore call each other by special names: *ṅáiepui*. The girl entering the other gens, is there termed *mungóm* by the older generation, by her mother-in-law as well as by her father-in-law; the corresponding old people of the other sib designate her as *mundū mungóm*. For her own age-class she becomes in her own sib *mágendoṅ* to her husband's brother and calls him *kúdi*. *Mágendoṅ* is the term by which a brother calls his sister exchanged for his wife, and *kúdi* the name a sister gives to her brother if he married her husband's sister. A married sister not exchanged for his wife is called *iukróiṅ* by her brother. Her husband's sister reciprocally exchanges with the woman married into the gens the term *m-eiáma*. The members of the other sib in her age-class address her as sib-friend.

The woman's parents of the other sib confer the appellation *mu-múeka* upon their son-in-law and his brothers, whereas the brothers-in-law distinguish each other in conformity with their relative ages as firstborn, elder and younger, as is usual among brothers and cousins. Accordingly they designate their wives as their elder or younger brother-in-law's female. This refers to all cases. The brother-in-law concerned is not married to the speaker's sister in exchange for his wife.

The offspring of the union is not specifically designated by the mother's parents. They address their daughter's children, now belonging to the other gens, as *úmaṇ*, just as they would their son's children. The only distinction made in the designation of the son's children refers to the different sexes where complementary terms for husband and wife are employed. This discrimination is not found, if the children of the daughter are concerned. The granddaughter is designated by the same term as the grandson by both maternal grandparents, her sex being specified only by the addition of the word female, *menígen* or *menági*.

POSTMARITAL RELATIONS

The fact already mentioned above that a boy has to take care of his *mundū*-aunt $(m_1)_1 - W_2$ was expressly stated to me, when I wanted explanation for the exchange of matrimonial terms between

these persons. It seems strange that young boys almost children should be charged with the care of widows. There might be two underlying ideas, namely that she should provide the boy with vegetable food from her plantation and that a widow be given to a man unprovided with a wife. Especially if we take in account the rôle of old women at the initiation of the boys, this manner of caring for them appears in another light. It is indeed possible that the exchange of matrimonial terms between other pairs of relatives in the extreme age-classes refers to a similar care-taking of the old people although I have no direct information concerning such cases.

RECIPROCAL AND COMPLEMENTARY TERMS

Several terms are used reciprocally between two persons. Such terms presume a certain equality between these persons. They spring from a distinct mutual relation in the kinship system.

This mutual relation can be condensed into a single term employed by each person for the other one.

Associated with identity of age-class, an absolute equality is established among the sib-friends. These are reciprocally designated as *mundū*, their wives, ceremonially exchanged, call each other (*mu-*)*náma*. A special term is used for each sex. Parents of different gentes exchanging their daughters for matrimony use the appellation *ńáiepui* for each other without discrimination of sex. The exchanged daughters call each other *eiáma*. Boys initiated together address each other as *ámbo*, the girls initiated at one time as *áma*. In all these cases the reciprocity is derived from the identity in the mutual relations.

The term *mágendoń* is used reciprocally between aunt and niece. It designates for a woman her husband's sister's (first) daughter, *i. e.*, her brother's stepdaughter and inversely her stepfather's sister, *i. e.*, her mother's brother's wife. Two different generations are involved in this case. The reciprocity seems here to be a consequence of the unity of the gens and the rôle assigned to the women in it.

Mágendoń is also in use for the reciprocal designation of other persons in different age-classes. Their mutual relation is particu-

larly brought about by certain customs (discussed p. 333), and a distinct behavior. Therefore equal terms are exchanged between the grandparents of the father's gens and the grandchildren, as far as they are of the same sex.

A distinct mutual relation may be denominated by two words. If the two appellations exclusively or preferably are employed for designating a particular tie of kinship, we may speak of complementary terms.[1]

Such terms may refer to relations within the same generation as our terms for brother and sister, for husband and wife. In the Bánaro system the terms for husband and wife do not even correspond entirely, as the term for wife is that for mother. Nevertheless *mumáia* is partially used in a complementary sense with *mumóna*.

Mágendoṅ and *kúdi* are also employed as complementary designations for the sister and the brother, mutually married in exchange for a corresponding pair of *Geschwister*. These terms are noticeable as a striking example of how an institution such as that of exchange-marriage leads to the shaping of privileged terms used mutually only between the couple in discussion.

In different age-classes descent may be designated by a relation distinguished according to whether it is between father and son or uncle and nephew. The Bánaro do not regard this kinship as a tie of importance sufficient to require special complementary terms. Their arrangement of the sexual relations and the care for the offspring is regulated by sib and gens. This leads to the reciprocal terms mentioned on page 335, but it does not constitute special relations among persons in a closer family. The only distinction made grows out of the importance assigned to a connecting relative, as to the legal father or the mother's brother. But this relation is not returned in the opposite way. Seemingly an obligating duty is refused. The father's brother might also act as father and a second brother of the mother take over the charge of an *ápi*.

A special feature is the employment of reciprocal and complementary terms with diminutive suffixes. These are used between

[1] Rivers, *History*, I, p. 8, discusses only the verbal type of reciprocity.

the extreme generations of grandparents and grandchildren within the father's gens.[1] Diminutives are preferably bestowed upon the oldest age-class.[2]

Analysis of the Terms

The system presented here is characterized by a great variety of terms. The social order itself is rather simple, in spite of the tribe's double partition into sibs and gentes. Pervading the people's life and thoughts it can easily be retained in their minds. The same is the case with the kinship terms, intricate as they might appear at first glance.

In order to grasp the leading principles in the system of terms we should look for distinctions. It at once becomes obvious that we find general denominations and special terms.

There occur appellations of an extraordinarily wide range referring to motherhood and childhood (son and daughter) and the connections of brothers, sisters and cousins. Undoubtedly the corporal connections between mother and child are of great importance. But it seems that it was especially the association in the nursing of the child (see above, p. 329) that led to the sharing of the term mother with the women of the community. Consequently also a prodigal use was made of the complementary relations for son and daughter. The common relations of mothers and children made it obvious that the younger generation in the tribe treated and termed each other without further distinction as to parenthood. These denominations express the primary relations of biological importance for the individual and are of course based on social behavior. In the Bánaro nomenclature a need for further distinc-

[1] Reciprocal terms with diminutive suffixes to designate the junior relatives are reported from the southwestern United States; the Tewa and Shoshonean tribes by Sapir, *American Anthropologist*, 1913, p. 135 *seq. cf.* also Harrington, *American Anthropologist*, 1912, p. 472. Besides from the Lutami in Oregon, conforming to unpublished material which Mr. Gifford mentioned to me.

[2] The Kawaiisu use diminutive terms for "great-grandfather" equal to "little younger brother," and for "great-grandmother" equal to "little younger sister." Reciprocally for "great-grandson" the term for "little older brother," and for "great-granddaughter" the term for "little older sister" is employed; Gifford, "Tübatulabal and Kawaiisu Kinship Terms," *University of California Publications in American Archeology and Ethnology*, vol. 12, p. 219.

tion was later felt—probably after the present social order was established—and led to the construction of compound terms. These are therefore comparatively recent and even today are used only if a specific determination is wanted. For vocative purposes generally the simple term alone is employed.

For the denomination of particular relations special terms are in use. These refer to a certain behavior of a group's members to each other, else no need for such designation would have arisen. The woman entering another gens when married ceases to call her father *ńiō*, presumably because he exercises no further rights over her.[1] She now adopts her children's appellation for him. The exchange-marriage constitutes new relations and a special conduct between brother and sister concerned. For this reason their former designations as brother and sister disappear and they adopt the terms *kúdi* and *mágendoń* which denote her husband's brother and his brother's wife (but also are applied to other additional relations). If a man's sister is not exchanged for his wife, he calls her *iukróiń* after she gets married.

There are rights and duties, certain institutions in the association, based on customs established in the life of the people. These are sanctioned by ceremonial performances and associated with religious ideas. The relation between the *mundūs* and their wives is reflected in the terminology. For the strange relations among grandparents and grandchildren the terms for sib-friendship are used, also within the same sib between persons of one sex, whereas sexual associations are hinted at by using designations for husband and wife between unlike sexes.

The kind of behavior sometimes becomes so important in the native's mind that a term is allowed to refer to only one certain kind of relationship. An illuminating example is the term *ápi* for a boy's mother's brother. This relation is isolated from all the others, because it is connected with special functions.

There is a case however where behavior is certainly very important, but not expressed in a specific term. We look in vain for a special denomination for a woman's goblin-initiator. His function

[1] *Cf.* note 1, p. 322.

is considered as a magic performance to be kept secret before the woman concerned. Nevertheless allusion is made to this relation in his being called *moro-miñio*, his goblin father, with reference to his son.

In another case an ascribed magic influence leads to a distinction of denomination. This is in the case of the mother's father who is called *rīī* if the firstborn child is female and *itjóiń* if a son is first born. But there is here no reason for a secret.

Why does it happen that other relatives are grouped together? Before we proceed in endeavoring to find out the leading principles among the natives, let us examine the terms from an analytical point of view. This brings out how we, by careful discrimination, may measure the exactitude of a native term. We may follow here A. L. Kroeber's[1] method of investigation employed by E. W. Gifford in his research work in California.[2]

GENERATION

In considering the question as to how far the terms of relationship involve the generation of a kindred person, we are at once confronted with a difficulty. To which generation shall the goblin-child be ascribed? His father belongs to the oldest generation, —that of the grandparents,—whereas necessarily his mother springs from the following generation. This fact entangles the goblin-child's relations. Its position is already indicated by the appellation received from its half-brothers and half-sisters (the ordinary children). The term *rũgemuin* is derived from *rīī*, mother's father, and *máñamañ* from *mańa*, father's sister. This indicates that the goblin-children are classified in the generation of their mother. Consequently it should be assumed that this is due to paternal descent (as already hinted at on p. 322).

The natives are aware of this difficulty in the goblin-child's relationship. A man designates his son-in-law's firstborn brother $\mu_1 - M_{B1/b}$ as *mu-táta*, and so inversely this man his brother's

[1] "Classificatory Systems of Relationship" in *Journal Royal Anthropological Institute*, 1909, p. 78–9.

[2] "Miwok Moieties," *University of California Publications in American Archeology and Ethnology*, vol. 12, 4, and "Tübatulabal and Kawaiisu Kinship Terms" vol. 12, no. 6.

father-in-law $M_{B1/b} - \mu_{A1}$. In consequence of the initiation the woman $W_{(A1 \rightarrow)B1}$ is considered as raised to a higher age-class, for her brother is designated as an equal by her sister's initiator. Her brother returns the same appelation *mutáta* to his sister's father-in-law as well as to her initiator, μ_{A1}, in the case of the initiator with the addition of *mundū*. There is no reciprocal term used in connection with a man's son-in-law's sister $\mu_{A1} - W_{B1/c}$ as we saw in the case of the son-in-law's firstborn brother. A man calls his son-in-law's sister *maiùk mumúek*. But a firstborn daughter treats her half-brother's mother-in-law on equal terms as *mu-máiń*. It follows from these statements that: (1) the goblin-children enjoy a privileged position in their age-class, (2) the initiated woman's brother is considered on the same level as his sister's initiator.

Consequently the initiation ceremony that blurs the demarcation line between the generations affects the initiated woman's own generation as well as that of her goblin-child.

Besides this self-evident lack of distinctness as to generation we find a disregard of generation that springs from other sources.

The exchange of reciprocal terms for sib-friend within the same sex and of complementary terms for husband and wife in the unlike sexes was mentioned above as taking place between grandparents and grandchildren in certain cases. The use of these terms implies of course a disregard of generation. But this ignoring of the age-class is due to certain customs in occasional behavior to each other.

Further cases show the disregard of generation in quite another light. If the daughter after marriage calls her father *rū̄*, she apparently employs her children's appellation for him. The change of terms as such must be deduced from the different conduct that becomes evident since she entered the other gens. But that she uses the same terms as her children proves a certain psychic solidarity of mother and child such as we ourselves encounter every day if a mother calls her own father, grandfather or her husband father.

It must be called a disregard of generation, if one and the same term embraces a plurality of relations, so that the same distinction is not kept in every case between the age-classes of the persons con-

cerned. The Bánaro system with its many specialized terms does not embrace very many different relations under one term. But together with a number of kinship terms of important relations, often some of secondary importance are associated. The latter sometimes do not accurately coincide with the first in the distance of generation.

For instance the fundamental meaning of *eiáma(ṅ)* seems to be, her (exchanged) sister-in-law, $W_{(A\rightarrow)B} - W_{(B\rightarrow)A}$. But the same designation refers also to her brother's wife and her son's step-daughter $\varphi_{A2} - (w_{A2})_1$. In the latter case it is ignored that in its other meanings the term keeps to the same age-class. The reason for this deviation apparently is to be found in a vague analogy derived from the sexual combinations of the social system. Essentially the term refers to the relation between two women connected by sexual ties through a kindred man.

Mágendoṅ designates the relation of either a man or a woman to a woman through marriage. It denotes for instance a man's sister-in-law and his own sister married in exchange for his wife. So far the term refers to persons in the same age-class. But it is extended also to a (step)father's sister, *i. e.*, the mother's brother's wife. It seems that in this case the children use the same designation as their parents for a relative—in their case an aunt—in the other gens. *Vice versa* a woman calls her husband's sister's (first) daughter, *i. e.*, her brother's (step)daughter—her niece—by the same denomination. Similarly the term is employed for aunts and nieces in the same gens. A man's mother's (step)-brother's wife, *i. e.*, the (goblin-son's) mother's brother's wife and a woman's mother's (step)brother's wife, *i. e.*, the (goblin's-daughter's) mother's brother's wife are designated by the term in consideration, as well as a woman's husband's sister's (goblin)-daughter.

The term *kúdi* is a woman's designation for a man connected through marriage. The sister uses it for designating her married brother, and any woman for her husband's brother. But it changes also the generation when applied by a girl to her mother's brother. We may assume that the child took the term over from her mother

for designating the same person. A woman uses this denomination for a male child—a nephew—in the gens from which she originated.

The three terms *eiámaṅ* between females, *mágendoṅ* preferably for males to females, and *kúdi* by females to males seem to be intended mainly to express relations between members of different gentes correlated by marriage. It will be noticed that the case refers to relations by or to women. There are special terms among the brothers-in-law who distinguish each other according to their comparative age in their own generation. Only the terms connecting female relatives are instances where "the exogamous principle overrides the generation."[1] For the women's behavior their adherence to the gens is more important than their comparative age. The gens regulates their sexual connections without regard to their age.

BLOOD AND MARRIAGE

The distinction between blood kinship and marriage relation coincides in part with the Bánaro tribe's division into sibs and gentes. But this differentiation is apt to merge the logically sharp differences of blood and marriage. As pointed out, the complementary sib always constitutes a kind of intermediate group with both blood ties and sexual relations. Accordingly the designations of relationship are affected. The division into sibs and gentes is mirrored in the terms.

There are terms dealing only with the gens relations, as *ṅáiepui*, the designation for the parents-in-law reciprocally, the appellations for the brothers-in-law, *—ṍo* for the firstborn, *táiṅi* for the younger one,—and *rīi*, the mother's father. The sister's father-in-law, *táta*, belongs also to another gens, and similarly the son-in-law, *múeka*, and the mother's brother *ápi*. The term *kúdi* for a woman's husband's brother or a girl's mother's brother also refers to intergentes relations based on marriage.

The two women in an exchange-marriage call each other *eiáma(ṅ)*. This term is also employed for a not-exchanged husband's sister and extended to the brother's wife. So far it refers to other gentes. But it designates also her son's stepdaughter,

[1] As Lowie terms it. *American Anthropologist*, 1915, p. 336.

$\varphi_{A2} - (w_{A2})_1$. This relation belongs to the same sib and gens as her stepfather, but she is the daughter of a woman who comes from another gens and of a father of another sib. In case of an exchange-marriage the father's sister becomes the mother's brother's wife. She is called *máña*. We might translate this term as aunt. It is employed for similar relations referring to women of the same sib in the next older generation marrying into another gens. His or her mother's mother *ma-ámo* belongs of course to a gens different from that of the mother, but she might well originate from the same gens as her grandchild, *i. e.*, she might descend from the child's father's gens (*cf.* table II p. 315), as $(w_{B1})_2$ or_4, $- \varphi_{A1}$. She occasionally may come from any other gens except that into which her daughter married. A child's mother's elder co-wife's mother is designated by the same term. This co-wife of course may come either from the same gens or from a gens different from that of the child's mother's. A term exclusively reserved for the inter-gentes relation is the designation for a man's mother-in-law *me-níginik*. *Mágendoñ* is the name applied to that sister who was exchanged for her brother's wife. She is a woman married into another gens as also his or her mother's stepbrother's wife and his or her stepfather's sister, or it is a woman related by marriage, as his brother's wife or her husband's sister's goblin-daughter, all being women of another gens. The meaning of the terms used for the relations among the gentes is rather sharply circumscribed; these terms do not refer to any other kind of relationship and give the impression of names coined later for a particular purpose.

Terms referring to the sib relations alone are *mundū*, his sib-friend, and *munáma*, her female sib-friend, *m-ámbo* his, *m-áma*, her initiation chum, and *mo-ō̃ro*, his wife's goblin-initiator.

The diminutive forms *mundū̃oabñ*, his little sib-friend, and *mumámoñab*, her little female sib-friend, are also used within the same sib but refer to a similar conduct. The number of these terms is restricted, and qualified for designations referring to the institutions of the sib.

Mere family terms within the same sib are the following. The word for mother, although profusely employed, is not used in con-

nection with another gens, except for the mother's sister. But she might also have entered the same gens by marrying the father's brother. The expression for father, *ńiō*, is strictly reserved for the own sib, although in the composition *mòro-miń̄iō̄* for his goblin-father it refers to the other sib.

But the terms for son and daughter are liberally employed also for the young people of the other gentes. It seems as if in this case the merely human relations towards the offspring are stronger than more or less artificial social bonds regulating the life of the aged people. In this case we may therefore speak of the psychological principle overriding the social distinction.

The same thing holds true for the terms for brothers, sisters and cousins. The terms for the grandchildren *úma(ń)* are also used from the mother's parent's side. In the father's family however an exception is made with regard to the unlike sexes as mentioned above (p. 337).

In a somewhat similar manner the names for husband and wife are extended to the relatives in the other sib, but in the diminutive forms of *mónoń̄ab* and *máioń̄ab*. The designation for the father's father *itjóiń*, finds an application to the other gens in the case of a firstborn son. For the other sib the diminutive form *itjóń̄ab* is in use. The stepfather, called *áta*, belongs to the same sib, but the term is extended to associated married relatives and so becomes connected with other gentes.

The term *mumáiń* for a woman's father's mother $(w_1)_2 - \varphi_1$ is also employed for her initiator's mother and extended to her husband's mother of the other gens $W_{(B\rightarrow)A} - \varphi_A$. The father's mother is associated with the initiator's mother, for the initiator belongs to the father's generation and social position. Probably the husband's mother was later considered the equal of the initiator's mother. *M-ámi* designates the mother's younger co-wife and may refer to a woman of the same or a different gens from that of the mother. The daughter-in-law *muń̄góm* is a woman entering the sib from another gens. She is classed together with a man's stepson's wife, also a woman of another gens.

This class of names is more indefinite, comprising the so-called

general terms (p. 306) which are based more on biological kindred and a behavior derived from it than on particular social institutions.

In the Bánaro case no clear distinction is drawn for individual marriage. Marriage relations refer to the social connections between tribal subdivisions.

A special point needs yet to be made in regard to the goblin-child's relations. For this case brings out how far real blood bonds are taken into account. A boy calls his father's father *itjóiń*, but a goblin-son addresses his stepfather's father as *ándū*. It will be noticed that the term for the boy's father's father is the same as that of the goblin-son for his goblin-father. We may explain it by the fact that the boy's father's father and the goblin-son's father are in the same age-class, consequently on the basis of the generation principle. But for the distinction between *ándú*, and *itjóiń* undoubtedly the connection by blood ties is decisive. This distinction however does not hold true in all cases. Even connection by blood does not constitute an impediment for semi-marital relations between cognates of unlike sex, as repeatedly mentioned above. Therefore a really exact distinction between blood and marriage cannot be expected in the system here presented.

LINEAL AND COLLATERAL KINSHIP

The distinction between lineal and collateral relatives is not rigorously observed in the Bánaro system. In some respects this is due to the neglect of generation.

The name *mu-máia*, meaning mother, is transferred to collateral aunts, such as the mother's sister, the father's brother's wife and the father's sister, and also to the mother's elder co-wife. These are the women who take part in the nursing of the child (*cf.* above, 329). The term *ṅniō*, father, is also employed for the father's brother, the father's sister's husband and the mother's sister's husband, uncles through marriage. Consequently this term is also used for persons in other gentes. It might seem as if it refers to the mother's husband. The designations for brother-in-law are also extended to the brother's brother-in-law. A man's father-in-law is called *táta* and equally his brother's wife's father. In both these

latter cases no distinction is made between a man's own relations and those of his brother.

Similarly the name for the stepfather *áta* is extended to the stepfather's brother, and to the father's half-brother. It is also associated with the stepsister's husband and the stepfather's sister's husband, relations brought about through marriage and referring to other gentes. Besides it embraces the father's sib-friend. *Múeka* is not only applied to the son-in-law but also to the son-in-law's brother, and *kúdi* not only to a woman's husband's brother, but also to her mother's brother. The mother's mother is called *ámo*, as is the mother's elder co-wife's mother. *Mágendoṅ* is the term for a man's brother's wife and at the same time for the mother's brother's wife and her husband's sister's goblin-daughter.

All the examples show that these aggregations of kinship must be derived from an association of similar relations. The similarity is based not on a counting of the proximity of the relation but on equality of position. Brother or sister and husband or wife, even father or mother in short all the near relatives, transfer the connection without alteration of the kinship tie.

SEX OF RELATIVE

This criterion and the following other two distinctive principles are founded on a biological basis. The tables at the beginning of this section group the terms of relationship from this point of view. Hence we need only to consider in how far this distinction is ignored.

A number of terms is exclusively or mainly used for one sex by the other, as for instance *kúdi* chiefly by females to males, and *mágendoṅ* by males to females. Other terms are employed within the same sex especially when dealing reciprocally with each other as *mundū*, *munáma*, *mámbo*, *máma*.

There are designations without distinction of sex as *máiepui* for parents-in-law and *mo-úma(ṅ)* for the daughter's children. For the designation for the females of these classes of relatives the determinative *menígen* or *menági* is added as to a man speaking or a woman. Similarly the wife of a brother's brother-in-law is distinguished.

The appellations among brothers, sisters, and cousins also do not originally distinguish the sexes. The adjectives older and younger are combined with the required determinative for female relative.

In all these cases sex is expressed only if needed for particular discrimination, and is evidently a later addition. In the connection among the relatives instanced here, the sexual element is neglected for it does not play an integral rôle. The persons are either immature children or aged people. For the designation of the wife of a brother's brother-in-law the relation between the two brothers determined by their corresponding age seems to be the important factor.

SEX OF SPEAKER

I am sorry to state that I was unable to collect terms from women directly. Therefore it may well be that in this regard some features of the system escaped my investigation.

In the previous paragraph it became evident that the sex of the two kindred persons concerned is an important factor for the coining of terms. The sex of the speaker is often nearly as important as that of the person addressed. Especially the reciprocal terms generally consider the sex of both persons related, as *mundū*, *mámbo* are used between men, *munáma*, *máma* between women,—only *máiepui* is sexually indifferent.

A certain reciprocity as to the sex of the persons concerned in the kinship system is rather widely maintained. A notable distinction is made between the brothers-in-law and the sisters-in-law, the men taking into consideration their respective ages, the women ignoring it.

But there are still other discriminations of the speaker. A man calls his father-in-law *táta*, a woman *itjóñab*. A man's mother-in-law is addressed as *níginik*, that of a woman as *máiñ*. A boy will call his mother's brother *ápi*, a girl the same person *kúdi*. The father's mother is named *máiñ* by a girl, *máioñab* by a boy. Furthermore the often mentioned designations for the relations between grandchildren and grandparents in the same sib and with the members of the other sib must not be forgotten here. At least, the

designation of the female relative depends on the sex of the speaker, *menígen* refers to a male, *menági* to a female speaking.

Obviously in a community that is not acquainted with other distinctions, the biological factor of sex is more interesting and important for social distinction than in a society with developed political and economic life. In such a society a number of further factors as property, descent, political leadership, etc., attract considerable attention and obscure the biological factors.

SEX OF CONNECTING RELATIVE

A closer inquiry into our system reveals a differentiation of terms according to the sex of the intermediate relative, by whom the connection is established from one person to another. This feature indeed is distinctive for several denominations referring to more remote relatives.

Mu-táta denotes the relation of a man to another man of an elder generation through a woman. Kinship is transmitted through a woman also in the term *kúdi*, but from a woman to a man. For *menígínik*, a man's mother-in-law, a woman is also the intermediate link. Other terms establish the connection through a man. *Mu-máiń* designates an elder woman's relation to another woman through a man. Quite the same is designated by *m-eiáma(ń)*, but in regard to the same age-class. *Mu-máńa* transmits relationship between women also through a man, but under special circumstances. For *mungóm*, daughter-in-law, a man is the connecting link. Analogously in *mágendoń*, his brother's wife, relationship is transferred through a man. A special case is the distinction between the terms *rū̄* and *itjóiń* according to the sex of the first child born—to the mother's father. This child it is true is not the connecting relative, but this third person is the determining factor for the kind of designation to be conferred upon the child's mother's father by it and its mother.

The attention paid to the connecting relative is characteristic of the system of terms presented here. The remote relatives are associated not by the degree and distance of relationship, but by the kind of the connection.

COMPARATIVE AGE IN THE GENERATION

This distinction is especially perceptible because it is lacking in most of the modern European systems.[1] We find it prevalent in the Melanesian kinship names. The Bánaro use differentiating terms for relative age in several instances.

A noticeable feature of the Bánaro terms of relationship is the designations for brothers, sisters, and cousins. These appellations differ only in a qualification as the elder and younger, and use the respective adjectives for this purpose. The female sex is indicated by the addition of the designation for his or her female relative. Special distinction is accorded to the goblin-child. Relative age seems to be regarded as the most important factor among the young people of the tribe.

The distinction of relative age is preserved also for later years. According to their birth the brothers-in-law distinguish each other as firstborn (goblin-son) *mu-ōo*, younger *ma-táiñi*, and elder, but not firstborn *m-áñaro*. Their wives however pay no attention to their respective ages; calling each other indiscriminately *eíama*. But a woman designates the wife of her brother's brother-in-law according to her brother's relation to the other woman's husband as *ma-táini menígen*, etc. In this case the connection between the men seems to be decisive for the relation of the women, *eiáma* being restricted to nearer relations.

Relative age in the same generation it may be concluded is more attentively observed among the men than among the women. The reason may be that a difference in conduct originally arose from the playing together of the boys and their relative acquisition of skill in handling weapons and tools.

CONCLUSION

The analytical examination of the terms shows us their character as words. We are able to compare their real meanings with the logical requirements that seem necessary to us for an exact expression of kinship. But even from the point of view of these logical categories it is not possible to exhaust all their possible references,

[1] It exists, however, for instance in the Serbian, Albanian, and Basque languages.

of which, for instance, we become aware when analytically breaking up these categories still further. Therefore a statistical registration will be only of a restricted value, for the limits of each of the categories and these themselves are more or less arbitrary. This point becomes especially evident in the case regarding the position of the goblin-child in its generation and the institution of the *mundū*-ceremonies as to marriage.

If we want to clear up a case, logical arrangement into categories is certainly of a great help, but it never can satisfy our need of interpretation, *i. e.*, its conditions and connections. For such a purpose we have to enter into an analysis of the terms from a general point of view; we have to trace them back as far as we can to their constituent factors.

III. INTERPRETATION.

General Features of a System of Relationship.

NATURE OF THE TERMS OF RELATIONSHIP

The significance of terms of relationship is found in the social status they accord to the person concerned among his tribesmen. They are a mark of identification, a passport, that regulates a man's position among his people. For the Bánaro and the other Papua his fellow-men are divided into various clusters, according to their conduct and to their rights and duties in the tribe. The recognition of kinship bestows social orientation on any two men who might meet and determines their behavior; it decides whether they are to be friend or foe, whether old feuds going on between their respective kinsfolk are to be continued or whether they are to consider themselves united by a common ancestor or by a friendly exchange of women. The closer relations involve also mutual protection by readiness for blood-revenge and are associated with common magic ceremonies. The women are distinguished, from the men's point of view, according to their sexual importance or prohibition as regards the speaker and their maternal relations. As regards the grouping of the offspring it must be remembered that

it is the elder generation commanding the language which bestows the terms. This accounts for the existence of a sharp distinction between grown-up people whereas distinctions within the youngest generation of children are neglected. Their relations are considered to be not equally important for distinction.

Among the adults the relations are associated with prescribed behavior, rites, and formalities. Whoever is not included in the kinship group is considered an alien; there are no regulations for peaceful conduct towards him, the only possible reaction is distrust and preparation against hostility. If a man is not a relative he is classified as a foe.[1] Inversely, in order to express friendship metaphorically, kinship terms are used.

Kinship is the basis upon which chiefly the relations of man to man rest. The common ancestry leads to a sharing of a community of life and experience, of food and climate, of friends and foes. Kinship determines heredity in future generations and the transmission of cultural goods as well as succession to inheritance of social rights. Being the most important factor that shapes men and determines their existence, it certainly is one of the most ancient notions of which men became conscious.

Psychological observation led to the recognition of the differences in behavior shown by people whom one encounters, as well as the dissimilarity of feelings and emotions one has for the different persons he meets. Accordingly not only are strangers segregated from the kinship-group, but kindred men themselves are also differentiated according to their importance, and persons of equal emotional value are associated. Consequently denominations have arisen in connection with such persons.

The foremost differences of emotional value are connected with biological qualities, sex, and age. These divergences are fundamental. A society with no other distinctions may be called homogeneous. This expression should here be understood in a merely sociological sense, not precluding racial composition. Foreign racial elements might well have been assimilated by marriage in the

[1] The same is reported by A. R. Brown from the tribes of Western Australia. *Journal Royal Anthropological Institute*, 1913, p. 151.

lapse of time. The general terms discussed above refer to these fundamental biological distinctions in a homogeneous society.

Such an aggregation as we have had to adduce from the Bánaro system as well as from other similar systems cannot have paid much attention to the individual family. The friendly relations obtaining among the leading men of the aggregation were aided by an exchange of women based on the principle of requital. The Bánaro system shows this exchange in a double manner and meaning: between the gentes and between the sibs.

With the growth of such a homogeneous aggregation a separation into groups takes place. Consequently a tribe is differentiated in several units and joined by *connubium*. Thus a social organization ensues, variable in its special features. This structure brings about relations of a new and particular kind discussed as special terms above (p. 312). A differentiation has taken place in bonds of friendship and kinship ties. Consequently the emotional value of the persons will vary more and descriptive terms will increase. A simple aggregation of groups will lead to many terms of a limited meaning, as we find among some Australian tribes.[1] . . . In the Bánaro system there are terms referring exclusively to sib relations, others exclusively to gens relations.

The social terms of course also pay attention to the biological factors of age and sex. Thus combinations of group-distinction with age-class or sex obviously occur. Sometimes biological terms with diminutive forms are used to designate social relations. In the Bánaro system the expressions, little husband, and, little wife, designate sib-relations.

Neither the homogeneous aggregation nor the groups of a social organization are composed of distinct individual families. I venture to believe it is this negative feature, this insignificance of the individual family, that is characteristic of and responsible for the peculiar method of combining various relatives under one term in

[1] N. W. Thomas, *Kinship Organizations and Group Marriage in Australia*, Cambridge, 1906. Spencer and Gillen, *Native Tribes of Central Australia*, p. 71 ff. and *Northern Tribes of Central Australia*, p. 95–130.

the much discussed classificatory system of relationship. Dr. Lowie,[1] in reviewing Rivers, remarks that the clan[2] cannot be the reason for the merging of the analytically constructed categories of relationship such as presented by Professor Kroeber and discussed above (p. 342) under the heading "Analysis." Lowie's argument is that in North America "the exogamous kin group is a relatively late phenomenon, the earlier organization being that of the 'loosely' organized tribes of California and the Plateau region." And in his "*Exogamy and the Classificatory System of Relationship*"[3] he speaks of "the exogamous principle often overriding the generation principle." He tries to explain this neglect of analytical categories by the importance of exogamy.

In the case of the Bánaro tribe we mark a distinction between the adults and the children. The youngest generation which has not yet arrived at the age of puberty is devoid of any distinction so far as belonging to a particular gens or sib is concerned. Succession in birth and descent from a goblin-father of the other sib are the only determining factors. This aspect is entirely changed after the age of puberty and the establishment of ties of sex and friendship. The same persons are then grouped from an entirely different viewpoint.

How may this be accounted for? How explain the change in the terms applied by the marrying daughter to her father and between brother and sister married in exchange? I think the common denominator to which we have to reduce these cases, in the "clan" tribes as well as in the "clanless" North American aggregations, is the fact that the individual family is a comparatively unimportant factor in comparison with the group. This certainly holds true for the conditions of Bánaro life with its system of sexual relations which precludes the existence of a family with strong individual ties. The attention of the people is directed upon their system and consequently the terms of relationship indicate a person's position in that system just as in a state with rank and wealth, the titles and corresponding denominations are the center

[1] *American Anthropologist* (N.S.), 1915, p. 340.

[2] *Cf.* Rivers, *History*, I, 6, and 7, note 1.

[3] *American Anthropologist* (N.S.), 1915, p. 236.

of interest. In the former case a man is made conspicuous by his biological distinction and his adherence to a certain social group. Therefore we find in simple societies elaborate systems of relationship terms, whereas in higher and more complicated communities birth and economic resources do not take kinship into consideration in an equal degree and not for the same reason as among primitive peoples. For more advanced societies kinship has become a means for certain purposes, such as succession in rank and inheritance of property. Primitive man keeps to relationship for the sake of his social position, advanced people for transmission of rights and property, and therefore each of them requires another method of grouping relatives.

LINGUISTIC ASPECT

The denominations employed as terms of relationship should be considered for a moment. Logically, terms of relationship may be regarded as ranking between proper names and pronouns. They occupy a position between both and might be called individualized pronouns or generalized personal nouns. It should be noted that proper names are little stabilized among Papuans. Among the Bánaro a child is named after it is able to smile and the ghost of the ancestor whose name is transferred to the child is supposed to enter into it when it is named. A man changes his proper name when passing the initiation ceremonies.

Proper names are always designations of individuals and independent of any relation, in as far as we do not take into account the avoidances of pronouncing names of certain relatives. Such avoidances are also in practice among the Bánaro people (p. 320). Thus a certain relation may influence even the application of proper names. The terms of kinship isolate relations between two persons and therefore are less general than pronouns and adjectives with their unlimited application to all persons and objects.

Among the terms of relationship there is a difference again as to the range of their meaning. As already mentioned above (p. 333) there are terms with very restricted significance, as for example *ápi*, a term applied by a man exclusively to his mother's brother, whereas certain other appellations are used with a very extended and general significance.

Instances of the latter kind may be found in the denominations for children and especially in the appellations used among them, as among the brothers, sisters, and cousins. These terms are of the most extreme generality and almost touch the class of adjectives in their universal qualifications and manner of designating persons as older or younger with the addition of his or her female.

It might be interesting to review the terms from the viewpoint of their etymological connection and venture a guess as to the meaning of some terms.

The maternal and female terms are distinguished by the nearly universal use of the sound *m*.[1] The words in their forms of address are: *máia*, mother, wife; *náma*, female sib-friend; *máiń*, father's mother; *eiáma*, her sister-in-law; *mána*, father's sister; *menígen*, *menági* for his or her female relation, *áma*, *ámi*, *ámo*, etc. *Meníginik*, a man's mother-in-law, is doubtlessly connected with these designations. The designation for the real father is associated with the (centripedal) *m*-compositions as *-mo* or vocative *miō*. The same connection is manifest with the appellation for husband, (*-móna* or) vocative *mom*. The centrifugal dentals are employed with names connected with a kind of indirect paternity, namely, *táta*, a wife's father; *áta*, stepfather, and *áitji*, elder cousins; *itjóiń* for father's father may also be classed here. For the designation of the mother's brother, *ápi*, a labial is used as often replacing a dental: the term *ápi* may perhaps be translated as tutor or protector. The designation for the goblin-child's father probably is chosen on a social basis and had better be left out of consideration here. For the designation of the sib-friend *ndū* the deictic sound-symbol *d*(*-t*) is found, which is generally associated with emotions.

The meaning of *moro-memean* is quite obvious as referring to *moróm*, goblin. *Óro* and probably *ō̃o* are connected with the same designation.

In dealing with the linguistic aspect of terms of relationship we should not omit a certain consideration. It has been asserted that terms of relationship cannot always express the social status of a

[1] *Cf.* C. and W. Stern's discussion about primitive speech and linguistic designations of parents, in *Die Kindersprache*, 1907, p. 304 *seq.*

person for they would not change in conformity with a transformation of institutions. Without entering into this question here I might state that it is my opinion that we cannot draw conclusions from social and psychological conditions in one period and employ them with reference to another state of life and mind without giving due credit to the changed circumstances. Language among primitive peoples has to deal with conditions quite different from those among advanced societies. Teaching of language, written documents and even repeated recitation tend to conserve the single word as well as the phrases. The more insignificant traditions are the less they are kept in certain formulae and rigid compositions; the less also is the conserving power of a language, the more possibility there is for variation, and also for adaption to new requirements. For this reason we find such an inexhaustible multitude of languages and dialects in the Papuan regions. But the language there is also more fitting to the reality of life. Consequently institutions and other features of life are more apt to mould the language to their needs than among a people with a standardized and, in a certain sense, petrified speech. And this holds true for the coining of terms of kinship the more attention is directed to the conditions of relationship.

PRINCIPLES OF A CLASSIFICATORY SYSTEM OF RELATIONSHIP

If we want to understand the principles of such a system as the one laid down here, we should consider how the ties of relationship are woven. My informants when indicating connection by kin used to refer to each single birth. They did this by enumerating the individual occurrences, stating birth after birth, thus constructing the chain of connecting relatives, by exactly the same method as applied in Roman law. But it was noticeable on the other hand that they never were inclined to sum up the number of births stated, and even refused to do so. Their reason seems to be that they regarded the births as isolated events, separated by a great space of time. This prevented them from summing up occurrences considered widely different, and each an individual fact.[1] The Roman

[1] *Cf.* my observations about counting, "Ethno-psychologische Studien," Beiheft 6 of the *Zeitschrift für angewandte Psychologie*, 1910, p. 25.

computation and the Bánaro manner of bringing in connection two relatives differ therefore not so much in the construction itself, as in the method of reckoning.

For this reason it may be advisable to throw a hasty glance at the native's manner of counting in general. The Bánaro and the rest of the tribes on the middle and lower Kerám river count from one to five, no further. In the absence of terms for numbers higher than five, the numerical notion exceeding this limit is formed by a problem of addition. It means that instead of seven the expression 5[+]2 is used. Higher numbers are indicated by a similar method. It is a custom to heap yams by fives, three down below and two on the top of the pile. A large quantity of yams is arranged in piles of five and the number rendered by saying "five piles and three pieces," as we say, for example, "five dozen and three." This method reminds one of the mode of counting as represented by tallying 𝍸 𝍸 𝍸 𝍸 𝍸 Translated into our system of an abstract handling of numbers, it would be 5(1+1+1+1+1). In the Tjímundo language there is even a difference of expression for the five in a collective sense: *tambónum* (a pile of five), while five as a numeral is *tam.* For all numbers higher than five however, the problem of addition is posed but not solved.

This manner of reckoning is not an isolated occurrence; it is a general feature of "primitive mentality,"[1] and met more or less with every people of "restricted experience" all over the globe. Their numeral abstraction has not been developed. That this is a cultural feature and not a deficiency of endowment is proved by the fact that native boys easily learn counting in the English or German language. When counting we are grouping phenomena according to the fact of repetition of certain sensory impressions. It is not only the number of yams but also the arrangement of them into piles that is observed and connected with the notion of the quantity. With other peoples standards of quantity consist in a basket full of taro roots, a string of shell beads, and so on. The

[1] *Cf.* Max Wertheimer, "Zahlen und Zahlengebilde" in *Zeitschrift für Psychologie,* 1910, p. 321 *seq.*

quantity is proportioned to a certain purpose, or conditioned by some other circumstances of daily life, such as a camel-load for instance. But the exact number of taro roots or beads is not counted, just as we do not care to know the number of grains in a bag of rice. The quantities correspond to the needs of barter.

When bartering becomes more important it seems that the numerical sense is developed and begins to play by numbering all kinds of things. But the counting remains restricted to certain groups of objects so that only things of a similar shape and appearance are counted under one heading. Classes of objects, such as houses *or* canoes *or* men, are counted separately and the language has special expressions for each category of counting. Objects of different size and kind are considered as reiterations of appearances so different that there is no common idea of merging the distinct classes. The reality of life is overwhelming in comparison to the abstraction of number. Attention is attracted by the importance of differences and averted from a further dissecting of the phenomena.[1]

The same method is applied in reckoning time. In old Babylonia the years were designated according to specific events and later counted from the beginning of a king's reign. The numbers were conceived in connection with events. In Siam and China years are counted according to a certain cycle of years. The Maya counting was arranged similarly. Time is limited by certain groups of years; there is no indefinite counting.

In a similar manner color-names are not entirely dissociated from their phenomena. They are still in part closely connected with the object from which they are derived, and in part associated with other qualities such as hard or hairy or wooden, etc. This means that analysis stopped with complex qualities without reducing them to their furthest components.[2]

A similar way of thinking is conspicuous in language. Thus the

[1] On the Admiralty Islands there is a numeral class for coconuts, fruits, and shell money, another numeral class for men, goblins, animals, and pieces of clothing, one for trees, canoes, and villages, one for houses, and one for sticks (of fences) and plantations. In the Malayan language and in many Polynesian, Micronesian, and Melanesian idioms similar classifications of the numerals are found.

[2] *Cf.* the writer's *Ethnopsychologische Studien*, 1913, p. 9–11.

grammar of the African Bantu tribes shows many classes of nouns.[1] This grouping, it is true, has in the first place a certain grammatical importance, but it indicates a classification of certain objects based on a crude similarity, as for instance: man, spirits, animals, parts of the body in one class;[2] fluids such as water, milk, blood, wine, oil, soup, grease, in another class; bananas, pineapple, peas, drops, mango, in another class and so on.

This procedure of classifying phenomena becomes particularly important in primitive philosophy and mythology. Among the coast tribes of the Gazelle peninsula the world is divided into things that eat and things that are eaten. In Babylonian mythology a certain god or spirit is associated with particular qualities or functions, as for instance, weather, hunting or drawing, furthermore he is connected with a planet and a fixed star, also with a plant, an animal, and a metal or stone, or even with a color. The idea of such a god involves a grouping of objects and notions, brought about on synthetic principles drawn from a partial dissociation of phenomena and association of the crudely detached qualities. The various customs and manners embraced under the name totemism contain associations and classifications of the same kind.[3]

The instances mentioned are drawn at random from different times. They refer to primitive thinking among different people. Of course primitive thinking is not the same everywhere, but we must distinguish various stages of it. The subject I referred to is the method of handling phenomena, especially counting. Primitive life is restricted to a very limited area and to the same resources of existence. Tradition is not rich and contact with people in other conditions of life is rare. Because of this the material from which experience can be drawn is poor. There is no need to carry through an analysis for gaining a supreme mastery of innumerable phenomena. The survey is gained easily by a certain grouping and classifying of the relatively few phenomena, as daily life offers them.

[1] *Cf.* Meinhof, *Grundzüge einer vergleichenden Grammatik der Bantusprachen*, 1906, p. 6 *seq.*

[2] The same association as among the Admiralty Islanders in counting. See note 1, p. 361.

[3] *Cf.* the writer's "Die Denkart als Wurzel des Totemismus," *Zentralblatt für Ethnologie*, 1911.

Primitive methods must be traced back to the meagre experiences of a narrow field of existence.

This classificatory method is simpler and more convenient to the human mind than analysis pushed to the utmost. Classificatory thinking has not disappeared among us, the white race, and still holds ground even with highly educated persons, in regard to realms extraneous to their principal fields of thought.

The method of a classificatory grouping displayed in various realms of intellectual life is also manifested in the method of grouping relatives. The much-discussed crux of the so-called classificatory system of relationship therefore seemingly ought to be interpreted as a result of a general method of thinking.

The exact number of births connecting one man with another is not essential in daily life. Therefore it is not considered. But the group of persons to which one man belongs, the men he is working with, his fellow-initiates, the females with whom he is permitted or from whom he is prohibited sexual relations, the men or women who care for him, who help him and whom he is obliged to help in feud and blood-revenge, these persons must be distinguished and grouped and designated together. Exactly how each one of these persons is related to him, is a theoretical consideration of no importance.

Ápi, the mother's brother, is not distinguished because he is in this or that degree related to his nephew, but because it is he who cares for his sister, the boy's mother, as a kind of tutor and delegate from the mother's gens, and as such also plays a particular rôle toward his sister's son.

Consequently this method eludes any discrimination of principles as to generation, blood, and marriage, lineal and collateral kinship, etc. It cannot compete with our abstract reckoning and universal applicability, but it fits closely into the reality and the special conditions of life.

Relatives are grouped according to the "likeness" of their relation, to the kind of behavior they manifest toward each other according to the customs, habits, and institutions of the tribe. And as these depend on the historical fate of the tribe, the terms of

relationship are certainly not one-sided, being conditioned not only by the social elements but by a number of subsidiary factors.

Variations in use occur through individuality and character and experience, through general conditions of life and historical events, and consequently lead to an almost inexhaustible variety of kinship terms in various tribes.

When on the search for terms of relationship the explorer is led to present his different gradations of kinship and affinity as if all these degrees were of the same value to the native. In fact this is not the case. The nearest connection is generally the most important, and the most distant one often thought of only at the interviewer's instigation and then associated with a characteristic body of relatives of the same kind. For instance the father's cousin may be associated with the father's brother as one kind of kinship.

What persons in one particular tribe are associated depends on special conditions, to be considered and traced back in each case separately. This method in general implies a certain degree of inexactness and leads sometimes to queer deductions.[1]

The terms of address among the Bánaro generally omit the determinative component in the compound terms, more often employed in reference to a third person. Everybody prefers to express himself briefly when he assumes to be sufficiently understood.

A certain inexactness of expression is perhaps also responsible for the metaphorical use of certain terms. I refer to what sometimes has been called psychological explanation of terms. For instance newly recruited boys called me father and their parents handed me over their children asking "my children in exchange"—by the way, another example of the discussed principle of requital. The men of a friendly tribe addressed me as brother.[2] This practice—also in use

[1] Note for example what Sapir reports from the Nootka and Kwakiutl tribes "Social Organization of the West Coast Tribes," *Transactions Royal Society Canada*, sect. II, ser. II, vol. IX, 1915, p. 365. "All the members of a village community are looked upon as direct descendants of a common ancestor and must therefore, at least in theory, bear definite degrees of relationship to one another." Thus, he explains, a man calls a little child of his tribe "his older brother" for the reason that they are respectively descendants from ancestors who stood to each other in that relation."

[2] Mr. Harrington in his paper on Tewa relationship, *American Anthropologist*, 1912. p. 492, draws attention to similar cases.

among us—employs terms of relationship for the expression of friendship.

To sum up: the classificatory system as far as its principles are concerned must, I think, be explained on a psychological basis. It is the outcome of the general state of mind also expressed in phenomena of other categories, as in methods of counting or in mythology, or in grammatical instances. There is a method of thinking that starts from the observation of certain striking resemblances in superficial appearance and associates different objects as such. Thus also the classificatory system of relationship produces a synthesis of people who are associated by the speaker on account of certain features in their social appearance, either of sex or of age, or because of their adherence to a certain group (gens, exogamy) or certain performances (marital or semi-marital relations, ceremonies and rites, etc.).

The manner in which the given form of a particular system of relationship is worked out varies according to circumstances and reflects mainly the sociological structure of the tribe, not only of the present however, but also of the past. These social conditions are manifold and refer to the tribe's status today as well as to its former path of development and is doubtless also interfered with by merely psychological influences as I have occasionally tried to exemplify in this paper.

If we should ever attempt to formulate a theory of human progress we could only do so by stating certain directions in the line of variation of the human mind, *i. e.*, in the method of thought; a very slow change would appear marked by a certain control of criticism. And it seems to me that progress consists in this control of intelligent thinking, not in more or less transient phenomena such as customs, laws, institutions, systems and so on that arise and vanish or change like the life of an individual.

Applying this idea to our individual case, the general transition from the classificatory system to the reckoning of degrees appears in a special light as the progress from synthetic to analytical thought. All the special phenomena however are bound to certain conditions of time, tribe and locality, limited by the historical succession of

events within a relatively narrow space. Thus "father right" or "mother right," or this or that particular system of relationship nomenclature must be explained as merely local constellations in social history and configuration of events which impress the mind to form words and appellations.

It must be remembered that in speaking of *our* system of relationship I mean the computation as used in modern law in accordance with the Roman method of reckoning. For when examining systems of relationship we should compare the most elaborate forms we are able to find in any tribe or nationality. We must not start from our more or less careless expressions in every-day life just as in ethnological research we cannot satisfy ourselves with a superficial collection of terms from small boys who as yet have not mastered the language sufficiently, and do not yet know all the institutions of their tribe. We ought to base our inquiry on the relatively highest development reached in each of the compared communities. This is achieved in their legal regulations. The system prevailing in all modern legislation is founded on an abstract calculation of degrees of relationship based on the Roman law. For illustration it may be remembered that the Roman civil law limits inheritance to certain degrees of relationship.[1] For the vesting of an inheritance the mere terms of relationship are not considered, but only the degree. For instance a man might be called nephew, but for the transmission of inheritance it depends on whether he is related in the fourth, fifth, or sixth degree, etc. We also employ designations in daily life, but their importance before the law is due to their connotation of certain degrees. The scientific and juridical reckoning consists simply in a counting of degrees, without any formulation of categories, except the direction in the ascending and descending line. The collaterals are reached also by the same method of counting. Our modern terms of relationship, however, can certainly also be regarded as constituting classes, as Prof. Kroeber has emphasized it.[2] These terms are derived from ancient words and have

[1] *Cf.* Hunter, *Roman Law*, p. 830.

[2] *Cf.* his "Classificatory Systems of Relationship," *Journal Royal Anthropological Institute*, 1909, p. 83.

changed their original significance and adapted their meaning to new conditions. The terms used in daily life are classificatory, the scientific counting is not classificatory, hence the confusion in interpretation.

Special Determinations of the Bánaro System of Terms

relationship and social configuration

In the previous chapter I have tried to outline the general conditions leading to a classificatory system of relationship. We were brought to the conclusion that the manner in which notions are formed depends on the method of thought in general. We must now concern ourselves with the content of these notions, as reflected in language and expressed in terms.

Relationship is a part of the social configuration of a tribe; it is a social phenomenon. It is obvious that the various social phenomena in a tribe are interconnected. Consequently it is a matter of course that any system of relationship is shaped by social exigencies. Institutions, forms and customs of marriage, succession, inheritance, are necessarily connected with relationship.

The question seems to me not a matter of connection but of kind; which institution influences the other, which is the more capable of transmission, which the more adaptable, and which the more petrified. We from our point of view are apt to regard relationship and its terms as something quite separate, and out of any connection. To us it seems something unchangeable beyond any possibility of transformation. Social institutions (we think) might change, but our terms of relationship appear as entirely ossified. Therefore the idea of radically different systems of relationship or even the changing and adaptation of the older ones to new social institutions is at the outset absolutely strange to us. But kinship plays quite a different part among primitive people, as I have tried to explain above (p. 353), and language in its primitive stages is more easily moulded.

As the notions contained in the terms of relationship are connected with the social conditions of a tribe, it is necessary to consider the social configuration in each case separately. This configuration

is not an absolute phenomenon, but the temporary state of a social process going on within a tribe. It means that even with primitive people we ought not to ignore their previous methods of life and the events of their history.

Unfortunately we are lacking in documents. And also in the case of the Bánaro tribe we are compelled to make conjectures. Before attempting any historical inductions from the presented terms of relationship some further considerations might perhaps be admitted.

POSSIBILITIES OF FORMER SOCIAL PROCESS

The present social configuration of a tribe may be regarded as the result of an isolated evolution within the tribe or as the outcome of external historical events. The first possibility emphasizes the internal tribal process, the other lays stress upon an encounter with another race, with a people of different tradition.

The internal tribal process consists of the mutual reactions of the individuals. These reactions are psychic phenomena as are all social processes.

Speaking of a tribe, we assume a homogeneous group, namely a group in which foreign elements have for generations been assimilated by marriage, and the traditions established so firmly that the component elements are no longer conspicuous.

The processes in such a group represent (1) a constant adaptation of all the members to the environment of nature, to the external conditions of life, and (2) a mutual adaptation of the members of the group to each other, *i. e.*, to the internal conditions of life.

If the individuals of such a group still bear the stamp of heterogeneous origin, their mutual adaptation will result in more frictions than in the contrary case. The more harmonious the individuals are at the outset, the less adaptation is required, and the more peacefully they preserve their traditions and hand them quietly down to their children. A homogeneous group will always be essentially conservative, as long as no exterior disturbances arise.

The rather homogeneous tribes of the Papuans manifest an extreme stage of adaptation to the soil and to the conditions of life and are therefore extremely conservative.

Such exterior disturbances may come from the natural environment, as for instance inundations, volcanic eruptions, earthquakes, epidemics, famine and so on. They may drive a people away from their settlements and thus involve a change in their external conditions of life.

More frequent and more important are disturbances brought about by other people. These may consist in amicable or hostile contact. Hostile contact must not necessarily result in conquest or in the subjugation of one or the other tribe.

The Melanesian invasion generally did not lead to any sort of subjugation but only to an occupation of territory. It may be that the immigrants occupied uninhabited territory or that in some cases they drove off or put to death the former occupants. The Melanesian settlements are to-day as a general rule everywhere disseminated among the Papuans. The establishment of friendly relations and exchange of women brought about such an intermingling of somatic type, of linguistic characteristics and cultural features that every kind of combination possible can be found.

THE PROBLEM OF TRANSFERENCE

In whatever manner the contact between two races and their traditions has come about, the transference of any traditions will depend particularly on the object concerned. Whatever is taken over from another tribe must pass over the sensitive paths of perception and go through the whole process of understanding, until it reaches its expression in imitative forms or in a fashion adjusted to the needs and ways of the receiving people. Therefore this process of accepting and adapting differs entirely as concerns objects of material culture and matters of spiritual life.

But it is not the same even in material culture, where the objects are easily perceived by the senses and the number of modifying elements are few. The propagation of foreign plants such as cocoa-nuts, areca-nuts (betel), almonds, sugar-cane, and tobacco, depends, of course, on fitting natural conditions. No modification could come into consideration. But certain objects, as for instance a stimulant like tobacco, will spread more rapidly than others such as almond

or pawpaw, regarded as a luxury of less importance. Tobacco is grown even in the mountain regions of New Guinea. As it is not used in any ceremonial and its name does not vary much; it is apparently a relatively new acquisition.

The diffusion of pottery is dependent on the presence of suitable clay. But it also requires a certain technique. The one or the other of the two conditions for pottery may modify the objects produced or extinguish the knowledge. If there is no stone for axe-heads as it may happen on small islands, tridacna shell may replace it. Basket work or carved wood may replace pottery and a technique may become more elaborate for the very reason that another handicraft cannot be sufficiently executed. A transferred technique might be employed in a different manner or for other objects or used for other purposes. A paddle may be evolved out of a club or a spear out of a paddle, a net-bag may serve as a headcover and wickerwork as protecting armor for the body.

There are psychological associations at work changing the purposes and also the technique itself that depend especially on local conditions. The erection of pile-houses on the inundated banks of the Augusta river is a necessity. But the fashion of their roofing is not due to similar needs, as for instance gable roofs with one or two points and other ornaments. Therefore we must consider the more ornamental traits as indicators of transference. On the other hand the possession or absence of a technique may be explained by natural conditions. The tribes on the mouth of the Augusta river who now use the dart (*Wurfpfeil*) may have formerly possessed the technique of making and using the bow, and later lost it because they could not find suitable wood in the sago swamps and in the mangrove lagoons.

The adaptation of spiritual culture is still more complicated. Oral traditions such as myths, legends, and religious ideas are accepted but assimilated into the receiving people's system of thought. The ideas are accommodated to the traditional method of thinking. In spite of the readiness to accept traditions of foreign people, only such parts are taken over and kept in mind which by association can well be retained. Miscomprehensions, omissions, and additions therefore are apt to distort the element transferred.

The taking over of social institutions is again a different matter. Social life depends on material culture and technique as well as on ideas. Especially are economic conditions closely connected with the supply offered by the local surroundings. They are the result of the technique applied to the resources of the land. The institutions must adapt themselves to these general conditions of existence and to the prevailing system of ideas. Consequently the social organization is intimately associated with other phenomena of culture. Hence an isolated borrowing of social institutions is extremely improbable.[1] It must be expected if social institutions are transferred, that a number of other cultural traits will also be transmitted.

The kinship system is closely associated with the system of thought and to religious life as well as to the economic organization, among the Bánaro. It seems to me therefore that the kinship system is a very conservative element and an essential alteration can only be brought about by close contact with another race. Such a contact would involve a real mingling and acceptance of other foreign traditions.

The transfer of social institutions is an important, almost a revolutionary occurrence. Acceptance of tools or weapons may or may not essentially influence life; the borrowing of legends, myths or religious ideas may or may not alter the traditional manner of thinking, but the adoption of new social institutions as a new system of kinship is connected with far-reaching consequences and a subversion of the methods of life.

INSTITUTIONS AND TERMS

There can be no doubt that the terms of relationship reflect the institutions of a tribe to a certain degree. This all the more, if the social structure is simple. But the terms are not necessarily the adequate expression of the institutions. The traces a social organization leaves in the kinship system and the corresponding terms

[1] I think Lowie's assumption of "diffusion" (*American Anthropologist*, 1915, p. 234–4) as to a system of relationship should be limited to cases of wholesale transference including a variety of cultural traits.

are often obliterated through the changes the tribe undergoes in its history.

Institutions may be altered without a corresponding modification of terms. The close affiliation of social institutions with adequate designations is shattered mainly by foreign contact. Acceptance of linguistic expressions and of social habits direct the development of each into diverging paths. Especially the formation of strata in society shifts the importance of relationship from the functional side that associates certain performances with a certain kind of relationship, to a mere statement of kinship connection for more economic purposes (*cf.* p. 277).

Terms of relationship may change without a parallel modification in institutions. An instance at hand also connected with foreign influence is the term cousin. This term is used in English without distinction of sex whereas in the language from which it originates the distinction of sex is maintained by the terms *cousin* and *cousine.*

Inductions from the Terms of Relationship

After having considered the limitations of the possible conclusions, we shall endeavor to reconstruct the social past of the Bánaro tribe, according to the terms of relationship, but also supported by the knowledge of their social organization, as described in the first part. I do not however believe as Dr. Rivers does that we can rely upon kinship names as phenomena exactly determined by social configuration and that we are able in this case to apply "the principle of determinism with a rigor and definiteness equal to that of any of the exact sciences."[1] In my opinion we cannot with absolute reliability reconstruct social organization and marriage system from a given set of terms of relationship. It is not only the present social system that is reflected in the terms, but language and denominations often limp behind events and institutions. We may however find vestiges of bygone days when there existed other forms of sexual life and assignment of offspring. The combination of kinship terms with the connected social organization may better

[1] *Kinship and Social Organization*, p. 93.

help us to trace back the social process. I think that the kinship terms are even a relatively more reliable indicator for what might have been the custom in the past than vague deliberations based exclusively on a given social structure. Though we may use the terms as a thread leading us back into the dimness of time, I should not trust them as absolutely reliable. The gain we get by the terms is only that of procuring for ourselves a higher degree of certainty for our guesswork. Our conclusions in this direction are foredoomed to this limitation. It may nevertheless be helpful to our studies to attempt some conjectures.

The most striking feature resulting from the examination of the kinship terms as well as from the social configuration is the absence of a family in our sense of the word. This negative characteristic accounts also for the lack of distinction between lineal and collateral relatives in another age-class. Instead of the family the sib must be regarded as the ultimate social unit.[1]

The ties connecting the sib are sexual relations strengthened by a common tilling of the plantations, and by common hunting and fishing. The gens, it must be remembered, is a political body unified by the belief in common ancestors and by mutual obligation for blood-revenge and participation in cannibal ceremonies. The concert of tradition and education is emphasized by the initiation ceremonies of the young folk.

The extra-marital connections sanctioned between the two sibs of the gens deserve attention especially in connection with the kinship terms. I may recall (1) the initiation of the women entering the gens, by an old man of the other sib (*cf.* p. 261), (2) the continuation of the initiator's rights by his son (*cf.* p. 263), (3) the initiation of the boys by the grandmother of the other sib (*cf.* p. 266), (4) the young people's exchange of terms for (little) husband and (little) wife with the class of the grandparents (*cf.* p. 326 and p. 336).

These data, compared with the manner of living on the upper Sepik region in large isolated houses divided into two halves (p. 257), may permit conjectures as to the origin of sib and gens.

[1] Similarly elsewhere the family has remained in a rudimentary state, as for instance among the southern Slavonic peoples.

Considering ritual customs as petrified relics of a submerged period of life, we may consider the sib as a subdivision of the tribe more ancient than the gens, and assume that primarily the gens coincided with the tribe. Such a supposition seems the more justified as we often find tribes divided into two moieties and indeed this kind of partition is widespread among South Sea peoples.

Supposing a small group were divided into two moieties with institutions similar to those of the Bánaro sib, we would meet with a state of affairs that approaches the condition of a certain claim of men of the one moiety upon women of the other moiety. This does not mean a promiscuous intermingling of the sexes of the one moiety with those of the other, but always implies limitations on individuals.

These restrictions result apparently from the old men's influence. Originally in all probability one father exchanged the right over his daughter for that over a daughter of another father of the opposite sib. Thereafter each of them ceded his claim to his son. In the period when the custom of exchanging girls among gentes was introduced, the woman of the other gens stepped into the place of the old man's daughter. Therefore he left it to his sib-friend to initiate her and says he is himself "ashamed" to touch her.

The sibs might be called exogamous, although it seems that a woman remained in her father's sib and that the men of the other sib exercised their rights upon her only by occasional callings. As the two sibs probably lived together an exchange of women was superfluous.

The woman's offspring seems to have followed different ways. Paternity can be ascertained only as regards the first child's father. This first child seemingly was ascribed to the father's sib whereas the rest of the woman's children were united with the mother's sib, *i. e.*, the sib of the woman's father. The particular position of the goblin-child as well as the exchange of husband-wife terms with its grandparents in its stepfather's sib (*cf.* p. 336) point in this direction.

It is a generally tacitly accepted supposition that sexual union is interdicted between blood-relatives. But I think it cannot be stated so dogmatically. Small communities at any rate favor intercourse with near kinsfolk.

We ought now ask how the gentes originated and in that way how the present system may have come about.

The fate of a tribe is always exposed to various accidents. War or epidemics may sometimes diminish or almost extinguish a tribe;[1] favorable dwelling places, better protected and with richer resources, will engender a prosperous and increasing offspring. The direction of development is therefore not always straight and constant, but periods of distress and misfortune alternating with prosperity lead to an undulating line. Thus history is impressed upon custom and language. But for the greater part we lack the key to the door of the past and its faint vestiges permit but an imperfect tracing back to bygone ages. According to each tribe's own experiences in the drift of life, customs and institutions are found varying individually in every case.

There are, as pointed out above (p. 368), certainly two main factors that influence society. One is constant variation in the sense of selection and adaption of the individual elements to each other and to their conditions of existence, constituting the interior process. The other grows out of external disturbances.

If we suppose a tribe divided into two moieties as the original form, it could hardly be understood how by a merely internal process the present system could have evolved,[2] especially if we take into account the particular denominations referring to the inter-gentes relations (*cf.* p. 336). Therefore it may be taken for granted that exterior factors influenced the evolution of the Bánaro tribe.

Taking for example the communities on the upper Sepík with their big houses as the original forms of a moiety system, we are moved to inquire what induced the people to establish the habit of exchanging girls among the tribes? As I explained in the first part with reference to the origin of exogamy (p. 276) it seems probable

[1] Such an instance, extinction by wars, was reported to me about a tribe that settled on the Balē, a tributary of the lower Kerám.

[2] The evolution among certain tribes of the North American Indians as it seems went in another way. There the moiety dominates the gentes so that each moiety or phratry is split up in a number of gentes, whereas the contrary holds true with the Bánaro where each gens is divided into two sibs. Besides the area inhabited by one tribe in New Guinea seems by far not so vast as in America.

that fights and consequent peace-making served as causes for introducing this new institution.[1]

Such hostile encounters might have been the consequence of a more intense pressure of roving tribes, on account of an increasing population or of an alien invasion.

The influence of the Melanesian migration is more probable in the Bánaro case, for their immediate neighbors a few miles further up on the Kerám[2] show many Melanesian characteristics in language and material culture. Besides the idea of giving away the girls in exchange would have been a new one for a people with a simple sib organization.

The gentes have probably been derived from tribes and a new larger tribe ensued from an aggregation of former smaller tribes of indefinite numbers now transmitted into gentes and become parts of a more comprehensive new unit. These gentes were patrilineal exogamic and were distinguished by the tradition of a primitive wedlock. The terms as well as the institutions make us believe it. These new ideas brought by the "gens" people, the Melanesian invaders, superseded the more ancient institutions of the "sib" tribes, the aboriginal Papuans.

The Bánaro System and Other Systems

I have tried to trace back the development of the Bánaro system to actual contact, to some clash between Papuan and Melanesian tribes and their traditions. Probably the same is the case with most of the so-called Melanesian kinship systems discussed by Dr. Rivers.

When considering the morphology of terms of relationship, Rivers is startled by the great diversity of Oceanic kinship systems,

[1] E. Sapir, "The Social Organization of the West Coast Tribes," in *Transactions Royal Society Canada*, sect. II, ser. II, vol. IX, 1915, p. 365–6, solves the problem of the origin of subdivisions in another manner. He assumes that a neighboring village community feeling itself subject to extermination seeks protection from another tribe against hostile attacks and finally takes up residence with its protector, in this way increasing the complexity of the social structure. Or he surmises that survivors of a conquered village seek refuge in another community. The latter case has been observed also in New Guinea.

[2] The villages on that part of the Kerám river where it comes nearest to the Ramú river.

"no two systems being alike."[1] But what else should we expect? Do we not find the same variety in somatic types, in languages, in cultural features, in social forms, of which one trait is represented by the system of relationship? Not even in the products of the less changeable material culture do we find specimens of quite equal shape and each region exhibits objects of peculiar characteristics. Considering variation and blending we ought perhaps rather to be startled to find anywhere two systems quite alike.

There is another point however in Dr. Rivers' statement that requires attentive consideration. He says:

> In Oceania contiguous peoples often differ more widely from one another in their methods of denoting relationship than others who live far apart and some of the closest resemblances occur among widely separated peoples.[2]

The fact cannot be denied. But is there not an explanation? I think it is the territorial viewpoint that distorts the connections.

It is obvious that what we call Melanesia to-day is the result of a blending of at least two different races with their diverse traditions. The indigenous race is now generally called the Papuan race, and is found not only in New Guinea, but spread over all the larger islands of Oceania. Their type and culture and language still prevail to-day in the mountains and in the interior of all the larger islands, although I think hardly anywhere untouched or uninfluenced by the Melanesians. The Melanesians are considered invaders of the country since they are generally found dwelling on the coast. It is certain that they came from the west and not all at once but gradually, proceeding from station to station. In the lapse of time they mingled more or less with the Papuans. The result is what we designate to-day as the Melanesian type. The present Melanesians however hardly represent the real type of the primary migrants, but they are now mixed with the aboriginal race with its traditions to such a degree that to-day they are only to be distinguished with difficulty from the others. This compound of somatic qualities, language and culture has indeed advanced so far that we

[1] *History*, II, p. 9–10.

[2] *History*, II, p. 10.

never find the traditions of either race correlated exclusively with certain somatic characteristics. The elements have permeated each other and the particular composition has been specialized by corporal and spiritual inbreeding. Therefore it is extremely difficult to draw strict geographical lines for whatever characteristics we might choose.

From this point of view the great diversity of kinship systems among neighboring tribes has nothing mysterious in it. Particularly if we compare mountain tribes with coast peoples we ought almost to expect a discrepancy in the system of terms. Such is the case in Fiji.[1] But somewhere else we might also find the one feature contiguous to the other.

Of course we should expect to find a Papuan system of relationship always closely connected with several other important Papuan traits. What the Papuan system is may be exhibited by a certain attitude of mind that uses *detailed designations for the various relations*, according to their peculiar qualities impressed by nature or habit. I think, therefore, that richness in terms is the characteristic trait, as also found in Australia.[2] The complication seems to be a secondary feature due to social intricacy in local cases.

The society of Pentecost or Raga in the New Hebrides cited by Rivers[3] presents for instance a complicated system of kinship terms apparently due to subdivisions, prohibitions and prescriptions of marriage as well as various restrictions and functions of relatives.[4] A rank system is also reported but not exhaustively investigated. It is however regarded as being in decay. The blending of the people is indicated by the fact that two languages are spoken on the island. Whether the rank system was or is connected with a stratification of races cannot be positively asserted.

From Savo in the Central Solomon Islands we have a rich but not complicated system. We are informed that "very divergent"[5]

[1] Rivers, I, p. 283–4.

[2] Howitt, Spencer, Roth.

[3] *History*, I, p. 190; *cf.* Dr. F. Speiser in *Petermann's Mitteilungen*, vol. 57, p. 152, and William Churchill, "The Polynesian Wanderings," *Carnegie Institution*, vol. 134, 1911, p. 45.

[4] *History*, I, p. 204–6.

[5] Rivers, *History*, I, p. 248.

languages are spoken and from this island a Papuan grammar has been published.[1] As a "most startling novelty" Rivers[2] mentions that

> there is not only the use of prefixes instead of the more usual suffixed pronouns of Melanesia, but there is the very striking fact that these vary with the sex of the person addressed.

The latter feature coincides with the manner of the Bánaro designations for brothers, sisters and cousins. Rivers proceeds (p. 251) to say:

> Throughout the matrilineal region it is believed that the clan to which a man belongs can be told by inspection of the lines on the palm of the hand.

I am not able to report the same of the Bánaro, but I was informed in Buin (Bougainville, Solomon Islands)[3] concerning the connection between the lines of the palm and the clan to which a man adheres. It must be also stated that in Buin a non-Melanesian language is spoken.

In Fiji the difference between coastal tribes and mountain peoples is evident. The mountain tribes live in small districts which bear the same name as their inhabitants. A similar feature has been reported from the Kerám region (*cf.* first part, p. 255). Each district of the Fiji mountain tribes is divided into a number of groups and these into smaller subdivisions. It seems to me that their manner of settling in small hamlets as also found in Buin or among the tribes of the Gazelle Peninsula and on many other places may be classified as the Papuan mode of settlement in opposition to the Melanesian village settlements. The Fijian mountain people also use the same names for alternating generations and many terms for designating their grandparents.[4]

It would be difficult to distinguish similar characteristics for the Melanesian systems, mixed as they are. But taking the Poly-

[1] Rev. W. G. Ivens, "Grammar of the language of Sa'a, Malaita," *Anthropos*, 1911, p. 755 ff., 926 ff.

[2] *History*, I, p. 250.

[3] *Forschungen auf den Salomo-Inseln, etc.*, vol. III.

[4] Rivers, *History*, I, p. 283–4; *cf.* A. M. Hocart in *Man*, 1915, 43.

nesian systems into consideration the other, non-Papuan, type becomes conspicuous. It may be described as a *tendency towards simplification*. This simplification means that the attention of the people is diverted from the kinship relations. The reason must be found in external disturbances such as raids, invasions, rape of women, migrations. It is a matter of course that the simplified system became associated with the migrating tribes.

The Simbo people (Eddystone, Mandeguan) mentioned by Rivers[1] are reported as possessing a kinship system of "Polynesian features with extraordinary simplicity." There are

> no social groups corresponding to clans, and marriage is regulated entirely by kinship, no one being allowed to marry a person with whom he can trace genealogical relationship.

There are no other restrictions for marriage. When I first saw Simbo men I was impressed by their resemblance to the Polynesian type though their skin is very dark. They speak a Melanesian language. The important fact, however, is that they belong to the great head-hunting tribes that raided the central Solomon Islands in former years. Their undertakings extended to Velalavella and Choiseul where they killed the men and raped the women.[2] This practice has led them to allow any elaborate system of relationship in their domestic affairs to fall into disuse. The basis of life in this war-waging tribe is entirely different from the more sedentary and less aggressive customs of the Papuans with their more personal feuds.

As an objection against my theory it could be stated that in Polynesia and Micronesia the migratory element succeeded in establishing a kind of dominion with different strata of society—as in the Hawaiian islands, in Samoa, Ponape and so on—whereas in Melanesia such a stratification is hardly found. The rank system of Raga (Pentecost), however, and also the organization of the Buin people[3] may be regarded as the result of such an attempt. But the migratory element probably was too inferior in number on the

[1] *History*, I, p. 251.

[2] *Cf.* writer's report in *Zeitschrift für Ethnologie*, 1909, p. 528.

[3] *Cf. Forschungen*, vol. III.

large Melanesian islands and was confronted by too many aboriginal inhabitants. Because of that they tried to settle apart, and in consequence of their great mingling with aboriginal blood the demarcation lines between the races early vanished. The migration to the Melanesian islands and to New Guinea did not result in a subjugation or in conquest but must be designated as an infiltration. The invaders were probably richer in traditions of all kinds and any individual group of aboriginals that came in contact with the invaders was ready to adopt what seemed fitted to them.

In Polynesia and Micronesia many islands were certainly not populated at all. The stratification in these islands may be either the result of repeated migratory waves that swept over those islands or of a subjugation of an aboriginal population. This results in a structure of society with quite other points of interest and therefore here the system of relationship loses its interest, and a remarkable defectiveness in terms results.

This theory would involve the subversion of L. H. Morgan's hypothesis of an older Malayan system and a later Turanian.

Morgan[1] regarded the Malayan-Hawaiian system as the more primitive one because it was simpler than his Turanian system. He was misled by the general assumption that simple systems, whenever found, should always be regarded as the original form of more specialized and more elaborate phenomena. He forgot to consider the possibility that simpler forms may also represent the reduction from a complex condition.

The evolution of terms of relationship seems to have passed through a number of stages:

(1) Discrimination of the important biological differences of age and sex.[2] This stage may be found in the systems

[1] *Ancient Society*, part III, chapter I, II and III.

[2] Anxious to reconstruct "periods of primitive family life" Dr. F. Müller-Lyer in a recent book *Die Familie* 1912, presupposes: (1) a period of unorganized animal-like life in hordes, (2) a period of life in a horde, organized according to age, and (3) a period of sexual differentiation, in which wedlock and family originated. As regards his first stage he lacks evidence, and bases his assumption upon "instincts." He ignores the fact that animals do not always live promiscuously. Many birds are strictly monogamous. So also the gorilla is reported to live. "Animal-like" therefore does not

with many but not complicated terms,[1] for example the Australian.

(2) Additional discrimination of social differences. This brings about a complication with the merely biological arrangement. An instance is the Bánaro system.

(3) Simplification through neglect of biological differences. Migrations, increased warfare and rape break old restrictions. Examples of this stage are the simple Melanesian systems, especially that of the Simbo tribe (Pentecost).

(4) Attention is turned away from biological differences to social relations. Kinship becomes important because of its social and economic connection. This leads to the so-called higher systems. They are simplified. The terms become unimportant for ascertaining kinship and are replaced by an abstract reckoning of degrees, according to the number of births.

However, what I want to emphasize here is that I think we cannot understand any system of terms without recurring to the entity of the social structure in the present as well as in its possible or probable development from the past. The problem of the terms of relationship should be treated in connection with the whole life of a tribe and not as an isolated phenomenon. I do not of course refer here to a bare study of terms for ascertaining facts and statements of similarities; on the other hand the terms of relationship doubtlessly help us toward a better illumination of the social past with a higher degree of certainty than the knowledge of institutions alone would give us.

Biological Consequences

The discussion of the social structure of the Bánaro cannot be concluded without taking a glance at the biological consequences it implies. In the course of this paper I have already hinted at the

mean anything. I am furthermore unable to see why he assumes first a differentiation as to age and afterwards one of sex. Both these biological differences are equally of first importance. The economic influence of female labor however must have been felt since the earliest times. Argument for this will be found in the strict partition of labor between the sexes among all primitive peoples.

[1] How these terms originated through differentiation of age and sex is well illustrated by diagrams in Heinrich Cunow's *Urgeschichte der Ehe und Familie*, 1912, p. 62.

importance which must be ascribed to exogamy, *i. e.*, to marriage regulations, in the determination of somatic inbreeding as well as in the fixation of the cultural type.

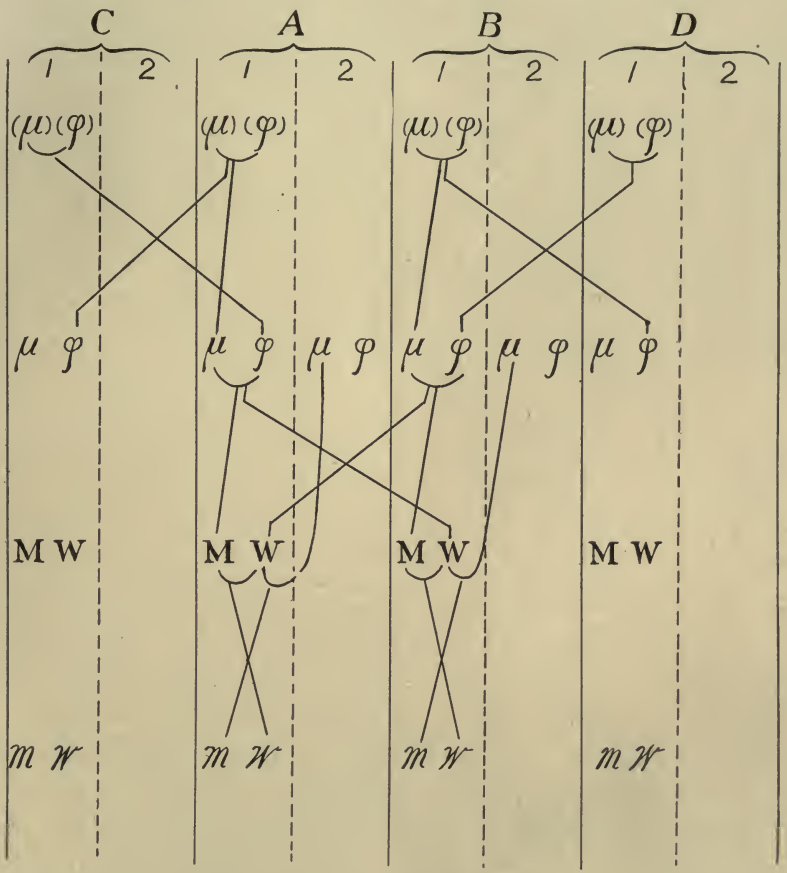


FIG. 96. *A*, *B*, *C*, *D* are gentes. 1, 2 indicate the sibs in each gens. The parallel relations of the second sib are not indicated for the sake of simplicity. The grandmothers of gens *A* and *B* are supposed to come from other gentes, *C* and *D*. Their children intermarry, the daughters W_A and W_B of the grandmothers φ_A and φ_B are exchanged between gens *A* and *B*. *m* is a goblin son. *w* is an ordinary matrimonial child.

These regulations practically affect everybody. The economic system, the traditional partition of labor between man and woman,

make a community of life between the sexes a necessity. Indeed all persons attain that state except cripples. A superfluity in the number of females counteracts by occasional polygamy. Where there is a lack, women are sometimes obtained from another tribe in the neighborhood. The number of foreign women, however, is never very great, and probably does not exceed five per cent. The same holds true for the other tribes on the Kerám and Sepík as far as I could ascertain.

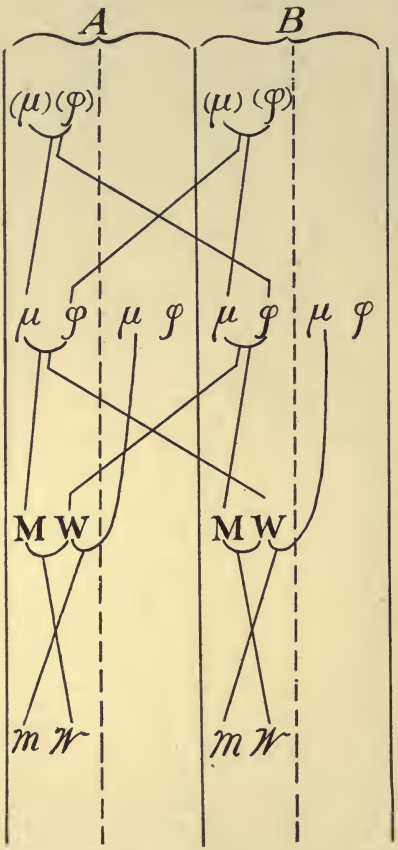


FIG. 97. *A*, *B* are gentes. 1, 2 indicate the sibs in each gens. The grandmothers of gens *A* and *B* are supposed to come from the same gentes *A* and *B*. Their children intermarry again; the daughters W_A and W_B of the grandmothers φ_A and φ_3 are exchanged between gens *A* and *B*. *m* is a goblin son. *w* is an ordinary matrimonial child.

Consequently women are generally taken from the other gentes of the tribe itself. The daughter may enter a gens different from that of her mother's origin. This case is made clear in diagram, figure 96, where two additional gentes, *C* and *D*, are taken into account. The second sib has been omitted in this diagram for the sake of simplification. The Greek letters in brackets (μ) and (φ) designate the great-grandparents.

In the diagram, figure 97, it is assumed that the daughter marries back into the gens from which her mother originally came. If two gentes keep on intermarrying with each other the children in the third generation will have the same great-grandparents on father's and mother's side.

FIG. 98. This shows the "loss of ancestry" in the goblin-children's line. ♂ male, ♀ female. The generations are counted from the children upward in the ascending direction. ——— the continuous line indicates the descent of male goblin-children. - - - - - - - the dotted line indicates the descent of female goblin-children. In the additional columns the ancestors in each generation are marked *X*.

In case of continuous exchange-marriage for two generations there arises a triple bond of relationship among the persons concerned. A woman's mother-in-law is her father's sister by the fact that she is married to her brother's wife's brother. This might serve to convey a hint of the extensive inbreeding resulting from the intermarrying of a limited number of people within a few gentes.

The peculiarities of the marital order here presented lead to some consequences interesting from a biological point of view (illustrated in diagram, fig. 98). In the line of the goblin-children we find only half as many paternal ancestors as compared with the regular sequence of generations among the other children, the offspring of the ordinary marriage relation. A goblin-child may have three male ascendants up to the seventh generation, while his half-brother of the ordinary children would have six. Of course this is an extreme case presupposing a constant descent of goblin-sons from only goblin-fathers as compared with descendants of ordinary parentage. In practice it will occur in the lapse of time that a goblin-child becomes the father of ordinary children and an ordinary child is called upon to act as goblin-father.

If the mother is a goblin-child the number of ancestors in her line is also diminished by half as far back as the line of goblin-children extends.

In the Bánaro system of marriage, unions take place between cross-cousins, between half-cousins, between cousins of the second and third degree, etc. The influence of the mating of near relatives on the offspring should therefore be considered. For this purpose a paper of E. M. Elderton, *On the Marriage of First Cousins*,[1] should be consulted. The author means, that whatever characters there may be, they are doubled and intensified by a mating with an individual possessing the same qualities. In particular surroundings, I think, the natural conditions of life sift and adapt the individuals through generations and generations, and unfit varieties are eliminated with

[1] *Eugenics Laboratory Lectures*, series IV, 1911, p. 38. E. M. Elderton arrives at the following conclusions: The danger of cousin marriage lies in the probability that the germ-plasm of each individual contains numerous latent defects each of which is rare in the community at large and each of which is of small danger to the individual or the offspring, unless the mating is with another individual whose germ-plasm contains one or more of the same latent characters."

the lapse of time. Applying this principle, together with the system of inbreeding, we find the explanation for two traits of the tribes in question.

One of these is the already mentioned individuality of each tribe in physical type as well as in psychical and cultural features. The other is manifested by each tribe's superb adaptation to the special conditions of life, to climate and to the dangers of malarial fever. But this adaptation is markedly limited to the tribal circuit. Its drawback is the difficulty in accommodating themselves to even slightly altered conditions of life, as for example if inland people are brought to the coast or coast men inland.

The inbreeding communities, as we have ascertained, have taken their racial elements as well as their traditions from different sources (*cf.* p. 368). Consequently each tribe has stabilized and intensified its characteristic combination, not only as regards its somatic[1] and psychic disposition resulting from the blending, but also as regards the composition of various traditions such as language, myths, technical handicraft, and so on. But the transference of each tradition is dependent on other conditions, as mentioned above (p. 369). Therefore we may find a group with a preponderant Papuan type as to somatics but speaking a Melanesian language, or the contrary may hold true.

Considering all this we get the explanation of many singular phenomena of tribes and tribal culture, each sharply moulded for a relatively small district.

Ethical Considerations

It has been already hinted in the first section (p. 275) that the organization of the Bánaro implies an eminently socializing factor. What surprises us is the formal regulation of transient relations extraneous to marriage, resulting in a definite arrangement of different possibilities of sexual life.

The life of every person is closely bound up with a continuous chain of ceremonies, compulsions, prescriptions, and avoidances, regulating a definite conduct and limiting the individual's anti-social

[1] I met on the banks of the Green River a tribe almost entirely albinotic.

tendencies, acting as bridles for domesticating savage man. By these prescriptions he is led to help his fellow-men while they insure him his own existence. They are closely associated with magic and religion, for superhuman power is latent in them, and however bizarre they may seem to us, they are the first humble steps toward higher socialization.

The question has been raised how these regulations originated. Regulations are intended to cause a repetition of occurrences which have proved useful or at least not harmful. The result of any deviation from the exact repetition is unknown and consequently the deviation avoided. I think we are entitled to combine these regulations with the large number of so-called compulsory thoughts and compulsory actions (*Zwangshandlungen*). These are not limited to pathological individuals, but permeate the life of healthy people also.[1]

Particularly striking as opposed to the prevalent prejudice regarding the position of women as very low, is the fact that in all the ceremonies the women practically enjoy the same rights as the men. An exception is found only in the secret rites particularly cultivated by the men and for the knowledge of the men in the goblin-hall, as for instance, ceremonies connected with the large bamboo pipes.

There are, however, peculiarities in the marriage institutions bewildering even to a certain broad-mindedness. We cannot understand the native's morality without taking into account the attitude of mind implied by their interpretation of superhuman powers and consequently the manner in which they try to deal with it. Especially in the case of institutions seemingly very immoral do we find support for them in magic associations and religious beliefs. This also holds true for the Bánaro.

How does the marriage system affect the character of the men and women concerned and how does it influence the children? To answer these questions effectively would require a prolonged stay among these people. However, as far as my observations and informations reach, I am unable to suggest special characteristics that could be traced back exclusively and correctly to their marriage

[1] *Cf.* the writer's *Lieder und Sagen aus Buin*, 1912, p. 393, 429 ff. and 459–60.

system. The men I met were comparatively intelligent and warlike. The children's education directed by the mother's husband is not different from that of other tribes.

Another problem is the people's attitude towards their own institutions and a furthering of their well-being. At any rate it is untrue, as has been asserted, that there are no tendencies among primitive tribes towards bringing about betterment from their point of view. This becomes effectual especially as regards the changes caused by the coming of the white man. Parties with conservative tendencies and of revolutionary character spring into existence.[1] Consequently changes take place, first in accepting foreign goods from neighboring tribes in closer touch with the white man, and also in taking over other institutions, such as for instance ceremonial dances and masks, as I was able to ascertain in a case of the Tjímundo tribe. Such friendly contact is generally accompanied by exchange of women. Thus the influence of the white man first results in a closer relation between the various tribes and in an exchange of the native goods and traditions among themselves. This indicates that the petrification of their culture is only relative and depends largely on the opportunity of a tribe to acquire new things by way of contact. Such a contact with aliens is especially apt to raise criticism in the ranks of a man's own people and consequently as an outcome of changed ideas, to modify institutions.

If we undertake to judge a people's institutions we should not lose sight of the fact that they also judge us. I refer for instance to their view of the European-American manner of both sexes dancing together, of the drinking habits and so on. It is difficult to find a point of view common to all except that we might condemn whatever institutions prove destructive to society as well as to the individual. But there is no other objective point of view, no absolute standard.

The social organization under which we live has impressed our mind to such an extent from the very beginning of our consciousness that we consider our particular form of social environment the

[1] *Cf.* the writer's "Ethnospycholog. Studien, etc." Beiheft 6, *Zeitschrift für angewandte Psychologie*, 1910. p. 123.

natural condition of life, a condition whose change would almost deprive us of the basis of our existence, of the fundamental standard of relations to our fellow-men. We are generally unable even to adapt our thinking to forms different from those to which we are accustomed.

The institutions of the social organization dominate the individual to such a degree that his actions become almost automatic and are generally no more considered than is his gait or the position of the fingers of a good piano player. This automatization of our thinking and the prearrangement of our personal behavior by formalities saves energy and facilitates the conscious process in the reciprocal relations.

A society changes its customs as a man may change his automatisms according to the varying conditions of his life, but it cannot exist without customs any more than a man could live without breathing. Of course the special significance of custom varies. The existence of such forms is at any rate more important than a particular form itself. The change of social customs is generally brought about very slowly so that in one individual's lifetime a certain organization hardly changes in essential features. Not every generation experiences such an important modification.

For this reason we are generally lacking in appreciation for other forms of social life. Consequently the organization of the Bánaro as well as that of other peoples extraneous to the white race's civilization generally meets with a lack of comprehension or even contemptuous criticism.

Conclusion

New constellations in social life however lead to an adaptation of thinking to new problems. If our mind is not compelled to such adaptations, customs are apt to ossify, and to become further adorned with ceremonialism. Otherwise it is ever ready to release itself from mechanical formalism.

It seems to me that the trend of cultural life leads from an abundance of established formalities to their simplification and to their increasing adaptability to the ever-changing new requirements of

life. We may therefore regard the very variable forms as the higher ones, for they are born out of a more widespread and more intensified consciousness.

The formality of primitive thinking finds adequate expression in the ceremonies associated with social life and is reflected in the far-reaching classification of kinship relations. A certain type of family form corresponds also to a certain type of political organization. The line of change from the Papuan family and its nomenclature to the Polynesian forms and terms of relationship and further to the Roman manner of organizing and reckoning kinship seems to me in harmony with these statements. When by change of political and economical conditions thought evolved out of the narrow limits of a restricted area it had to deal with, the social structure became complicated instead of the kinship organization. Then the ancient forms were broken and simplifying generalization began to modify the terms of relationship.

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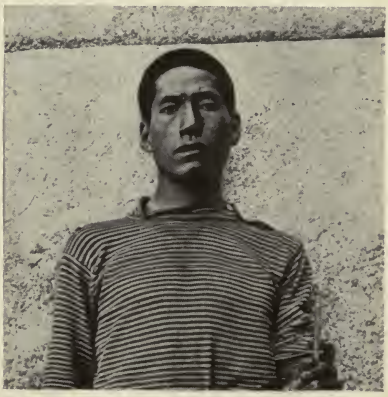

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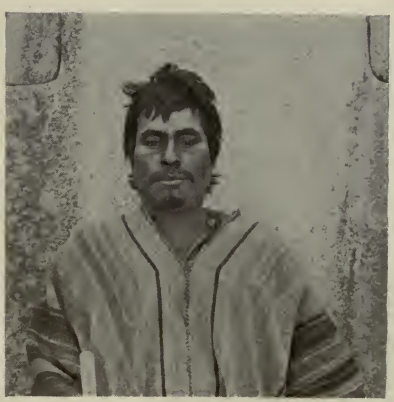

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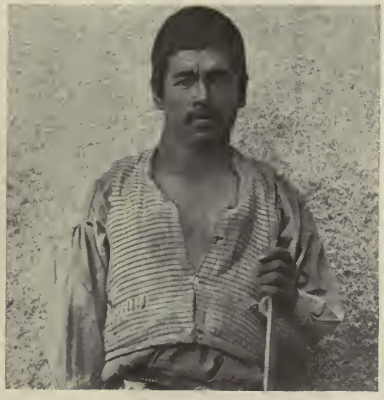

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